FLASHES AND PLUGS

MORE WIZARDS. That telephone men know their algebra is proved conclusively by the deluge of correct answers to the telephone number puzzle published in the October 26 issue of TELEPHONY. Here are some of the contestants and their comments:

J. M. BLAND, VETERANS HOSPITAL, WARD A-1, OTUN, N. C. Says Mr. Bland, formerly a lineman for the Carolina Telephone & Telegraph Co., Tarboro, N. C., "Here's the answer, but [instead of calling the gal] I think I would have gone to the movies."

C. W. LEMONT OF LEMONT'S, LINCOLN, NEB. "Until I read your second item about the telephone number, it did not occur to me to see if I remembered anything I had learned back in 1902. I'll bet there are many high school kids in second semester Algebra who can do this problem, but two sides of 8½ x 11-in. paper—Ye Gods and Little Fishes—Mr. Clapham must have gone to college! Here it is on one side of note paper and in *ink!*"

[*Editor's Note: Winner Clapham's handwriting was larger than Ink User Lemont's and we've microscoped the former's handiwork for erasures but couldn't find any. Maybe he just prefers pencil.*]

FRANCIS L. MIKSA, SWITCHMAN, ILLINOIS BELL TELEPHONE CO., AURORA, ILL. "Enjoyed the problem. Why don't you propose a problem or puzzle each month in your department? I believe it would please a large section of your readers."

HUGH D. STRAUGHN, SOUTHWEST ARKANSAS TELEPHONE CO., GLENWOOD, ARK. "Mathematical Wizard?"

• • •

HOLLYWOOD WOLFE! James D. Wolfe, desk officer at the Hollywood, Calif., police station, says he wondered why some women hang up when he answers the telephone. Then he discovered he had been announcing, without much pause between the words: "Hollywood—Wolfe!"

• • •

HELLO, MOM! These familiar words, spoken by Michael De Bartolo by trans-Atlantic telephone from Rome, Italy, to Mrs. Joseph De Bartolo in Quincy, Mass., brought joyous tears to the mother's eyes. Her soldier-son had been reported missing in action since March, 1944, and just this month was discovered in Rome.

• • •

"SEE YOU IN CHURCH." And the bride-to-be who said these famous words to her future husband by mobile radio-telephone wasn't kidding. Patrina Frances Vulpeta picked up the telephone installed in a Chicago City Hall Limousine Service car and spoke to Joseph Ciolino whom she was to marry within a few minutes. He was waiting at the church.

• • •

WELL, ALL REET! Not blacked out because his date bait's off-the-beam hearing kept him from making with the jive talk over the Ameche, 17-year-old Douglas Baird of Whitesboro, N. Y., worked out a gadget which made his woo pitching copasetic, and already has paid off in a college scholarship and bids from industrial organizations.

Doug set to work in his cellar and built an amplifier which can be used for the hard-of-hearing and turned off when persons with normal hearing wish to use the telephone.

TELEPHONY

The Journal of the Telephone Industry

NOVEMBER 30, 1946

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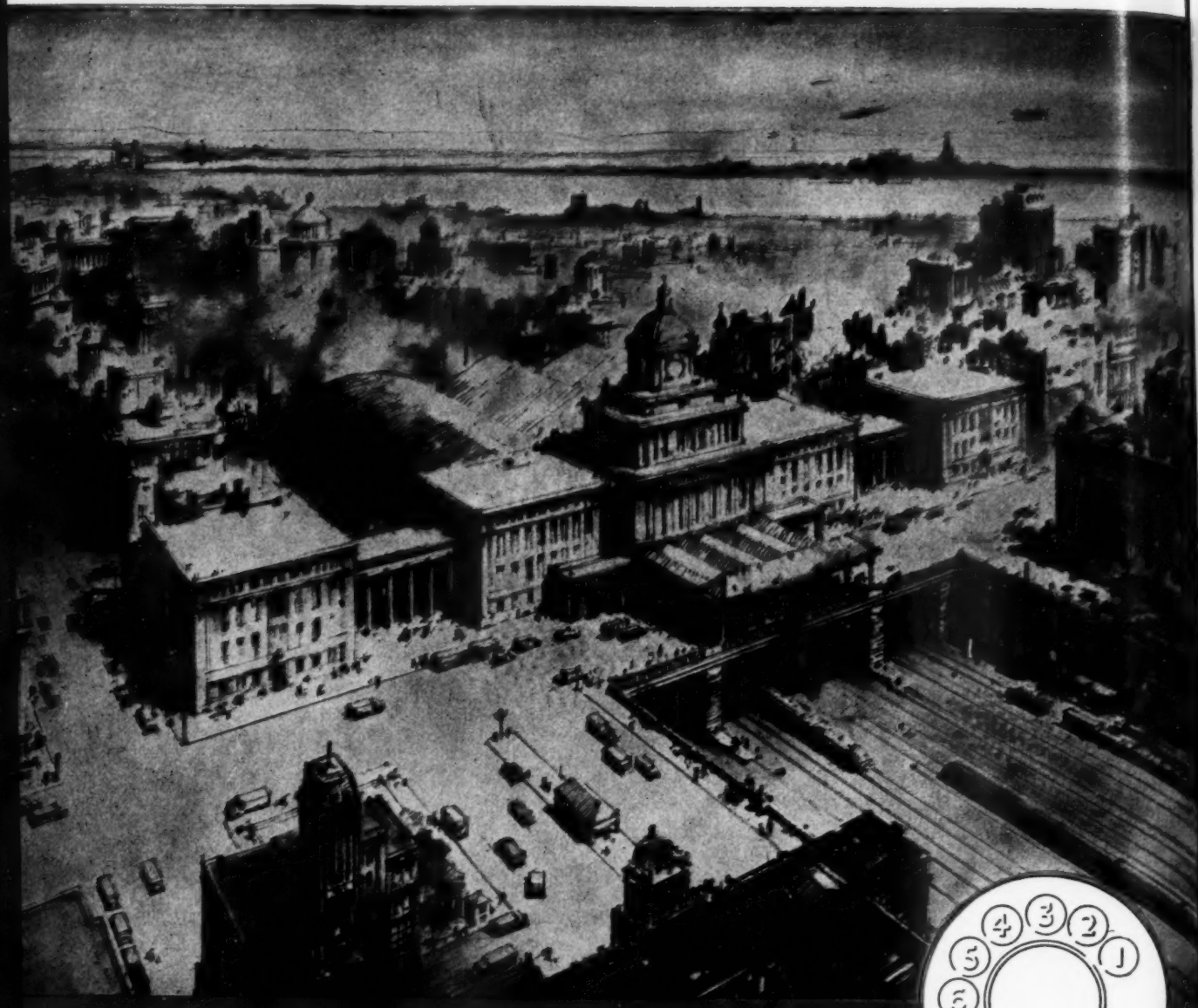
U. S. A.

RESOURCES . . .



REGENERATOR

- *has therefore been designed to receive impulses before they become too distorted and re-transmit them at the correct speed and ratio within narrow limits.*
- *has capacity for storing 40 impulses so that the "input" never overtakes the "output."*
- *has the facility of catering for any number of impulse repetitions, the loop and leak resistances in each stage can be of any value up to 2,000 ohms or as low as 50,000 ohms respectively*
- *has a robust construction and compact dimensions of 4¼"x4"x4" and only occupies the space of six type 3,000 relays.*
- *has ease of adjustment and ease of removal if necessary, for it can be "jacked" in or out.*

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HERE ARE THE FACTS

USITA President R. A. Lumpkin, in commenting at recent state telephone conventions upon the statement of the national association's executive vice president, Clyde S. Bailey, at the recent hearing of the Georgia Public Service Commission concerning the telephone service situation in that state, made a statement which should make a deep impression on state regulatory commissions and the public.

Mr. Lumpkin stated that Mr. Bailey's statement (TELEPHONY, November 2, page 11), explaining the obstacles which face operating companies and their manufacturers and suppliers in satisfying service and equipment demands in this day of raw materials and manpower shortages, should be sufficient to satisfy not only the Georgia commission, but all commissions and the public in general that in supplying telephone service, our industry faces no fewer difficulties than those which are faced by the manufacturers of practically all products and services in meeting the public demand.

The Georgia commission ordered 115 Independent companies and the Southern Bell Telephone & Telegraph Co. to appear on October 23 to tell why telephone service cannot be improved and expanded. Independent manufacturers also appeared at the hearing, explaining the conditions confronting them in producing sufficient equipment to meet current demands for telephone service.

While we do not know what findings the Georgia commission will make as a result of the hearing, it did afford an opportunity for the industry to present formally information as to the reasons why the telephone industry as a whole has not been able to catch up with the demand for service. Of course, it is an old story to the industry and one which should be well understood by the public and commissions without holding hearings which consume valuable time of the personnel of operating companies, manufacturers and the commissions themselves.

It's the same story that confronts producers of automobiles, refrigerators and almost every other conceivable product and service in meeting the huge demand for those items. The people know it takes raw materials and manpower to produce these items and they know that there is a shortage of raw materials, brought about, mainly, by work stoppages, and a manpower shortage—so up to now at least they have taken the situation more or less as a matter of course.

But when it comes to telephone service, the situation seems to be different. It also takes raw materials and manpower to produce equipment through which telephone service is rendered to the public, and why the public and commissions should become so exercised because telephone companies cannot meet the unprecedented demand for telephone service under present shortages is difficult to understand.

The telephone industry, through testimony of operating companies, the USITA and manufacturers, has given a true and detailed story to the Georgia commission as to the difficult situation confronting it. As Mr. Lumpkin states, that story should satisfy that commission and all commissions that the industry is doing just about all it can do to meet the demands of the public under severe conditions not of its own making. We hope it will result in a cessation of further costly and time-consuming broadside hearings and unwarranted attacks against the telephone industry.

SMALL COMPANIES FOUNDATION

Of The Enterprise System

By FRANCIS X. WELCH
TELEPHONY's Washington Editor

Small telephone company just as important as large company in its own sphere of operation. . . . If we do not firm up the foundation of the small company, the whole system of free private enterprise must suffer.

IT MAY be true, as the saying goes, that good things come in small packages. But, that very statement carries with it a strong inference that a pretty good package is necessary for protection. Otherwise the valuable small item might well get damaged, mislaid and even lost by very reason of its inconspicuous size.

Small business in the United States is admittedly a good thing. It is, indeed, the real basis for our traditional system of free private enterprise. It would be impossible for our great industrial combinations (all of which had small beginnings, themselves) to continue to thrive and operate successfully in this land of ours without a multitude of small supplementary companies engaged in servicing or supplying the big concern.

For example, where would our great General Motors Corp. be without thousands of independent sales and service companies all over the land, many so small as to operate out of the front rooms of a crossroads garage? Where would the great General Electric Co. be without the legion of independent radio and appliance retail dealers to distribute its products to the nation? One could go on and on with all the other big names on the New York Stock Exchange.

Some idea of the real importance of small company operations to the economic life of this nation may be obtained from the estimates of the U. S. Department of Commerce for 1939—the last year of normal peacetime operation before the outbreak of the great conflict in Europe which began World War II. During that year *93 per cent* of all business concerns in this country were small. These small units accounted for 45 per cent of the workers and 34 per cent of the business of the nation. In 1939, the department estimates showed that 92 per cent of all manufacturing concerns, 93 per cent of all construction concerns, and 77 per cent of all wholesaling concerns were "small."

The following table gives a complete breakdown, according to the nature of various lines of enterprise, of the ratio of small business to total business in the United States:

Note particularly the high percentage of small business concerns engaged as "service establishments"—98.7 per cent and highest of all the classifications. This is of special significance in considering the status of small Independent telephone companies, because they also belong in the category of "service establishments." Here is another table based on commerce department figures which gives about the same picture from a different angle—the angle of the small employer. Observe especially the "public utility" classification.

Per Cent of Firms with Less Than Four Employes[1] by Industry Groups, 1939

Industry Group	Per Cent
All Industries	82.1[2]
Service industries	89.5[2]
Transportation, communication, and public utilities	85.8
Finance, insurance and real estate	83.8
Retail trade	76.4[2]
Contract construction	72.3[2]
Wholesale trade	63.2[2]
Manufacturing	47.6[2]
Mining	38.9

[1]Survey of Current Business, May 1944, pp. 12-14.
[2]The percentages here differ from those in the Table on Small Business 1939 for the reason that the basis is different.

SMALL BUSINESS 1939

	TOTAL UNITED STATES			SMALL BUSINESS			RATIO OF SMALL BUSINESS TO U. S. TOTAL		
	Number of Establishments	Personnel[1]	Value of[2] Output Million $	Number of Establishments	Personnel[1]	Value of[2] Output Million $	Establishments	Personnel[1]	Value[2] of Output
Service Establishments	646,028	1,754,538	3,420	637,585	1,294,724	2,241	98.7	73.8	65.5
Places of Amusement	44,917	257,200	998	40,351	145,640	333	89.8	56.6	33.4
Hotels	27,987	362,047	863	25,224	111,183	229	90.1	30.7	26.5
Construction Firms	215,050	1,300,439	4,520	200,299	610,740[4]	1,546	93.1	47.0	34.2
Manufacturing	184,230	7,886,567	56,843	168,814	2,358,968	17,367	91.6	29.9	30.6
Retailing	1,770,355	6,210,788	42,042	1,614,310	3,487,984	17,836	91.2	56.2	42.4
Wholesaling[3]	92,794	912,795	19,419	71,681	355,731	4,100	77.2	39.0	21.1
Total	2,981,361	18,684,374	128,105	2,758,264	8,364,970	43,652	92.5	44.8	34.1

NOTE: Small Business: Manufacturing plants with 100 or less wage earners; wholesale establishments with less than $200,000 annual sales volume; retail stores, service establishments, hotels, places of amusement and construction establishments with sales or receipts of less than $50,000.
[1]Proprietors and employees except for manufacturing which includes only wage earners.
[2]Value of product for manufacturing; sales for wholesaling and retailing; receipts for service establishments, hotels, and places of amusement; value of work performed for construction.
[3]Wholesale merchants.
[4]Approximate—Source N. Y. Trust Co. "The Index"—Autumn 1942.
Source: Computed from Censuses of Manufacture and Business.

Right off the well-informed reader of these pages may well ask—with honest bewilderment—"How can this status of importance of small company units be true in the telephone field? It may be true in other lines. But surely, with the Bell System companies serving about four-fifths of all the telephone subscribers in the country and doing about 90 per cent of the dollar-volume of business, it can hardly be said that the Independent companies (some of which, incidentally, could hardly be called "small business") form any major basis for the telephone industry. Something is wrong with your picture, somewhere."

No, gentle reader, with all due respect your correspondent still submits that the preponderance of Bell organization activity in the telephone field does not subtract one iota from the importance of the Independent telephone company's position, even to the smallest unit.

The explanation of this paradox lies in the distinction which must be made between non-regulated competitive enterprise and regulated enterprise, such as the telephone business or any other public utility. If a competitive non-regulated enterprise, such as the manufacturing of automobiles, were dominated by one corporate organization to the extent of 80 or 90 per cent, the result would be so near a monopoly as to raise a curious question whether the "competition" could (or even should) survive. But when we deal with a regulated utility industry, such as the telephone business, we are dealing with a service which is already, admittedly, a "monopoly," in a territorial sense, by its very nature. In consequence, the Independent telephone company does not "compete" with the Bell organization, nor vice versa. Each has its own sphere of operations, and, within that sphere, it amounts to 100 per cent of the telephone business, whether it is a Bell or an Independent.

It follows from this distinction, that it is erroneous to gauge the industrial importance of the small Independent telephone company (or even all Independents as a class) by their relative ratio to Bell company operation as to dollar volume business or subscribers served, number of employes, or any other standard comparison. It is a superficially plausible but inherently spacious comparison—recalling Abraham Lincoln's witty remark about the chestnut horse and the horse chestnut.

No, the telephone company, regardless of corporate affiliation, must be considered with relation to the community or area in which it serves. If that community or area is served by an Independent telephone company (as a result of economic developments through the years) the welfare and importance of that company is just as paramount from the standpoint of public convenience and necessity as if it were served by a Bell company. No one would admit this more readily than the policy-making officials of the Bell organization itself. The best evidence, of course, is the Kingsbury Commitment which has served to preserve the status quo between Bell and Independents for these many years.

This policy was adopted as the result of recognition, within the telephone industry, that it was to the advantage of the industry as a whole to stabilize the relative field of Bell and Independent operations. The Bell people realized that they could be injured just as seriously by political repercussions which might well follow any attempt to occupy the entire telephone field as the Independent companies might suffer as the result of Bell acquisition. It was agreed that there was a field and a place for both groups, and that the public, at large, would be better served on a "to-each-his-own" basis.

The economic importance of the typical small telephone company, therefore, must be considered in its own community setting, rather than with relation to other telephone companies, operating in other communities. Its fate and fortune are tied up, to a far greater extent, with the general fortune of business in that community, than with the fortune of another telephone company in another state or area.

If the local telephone company fails, it is the local community—not another — which suffers in terms of employment, public convenience and necessity, loss to local investors. Viewed in this light, the average small telephone company is about in the same boat as the local butcher, baker and candlestick-maker. There is one important exception. Its rates are limited by regulatory law. The other small businessmen are not so restricted.

So let us go back to the importance of the "package," which our small "good things" must have for their protection. First of all, consider the problem of the small telephone companies' local neighbors—the other small, but unregulated, business — the butcher, the baker, the candlestick-maker. Here is what Alexander Calder, chairman of the finance committee of the National Association of Manufacturers says about their "packaging" problem. He states:

> Despite the frequent statements that the future existence of democracy and the free enterprise system depends upon the continuance of small business enterprise, current interest in this group centers largely around the questions of: (1) Taxation; (2) technical, economic and managerial advice; and (3) financial aid—both loans and venture capital. Efforts to reduce taxes which have resulted in an increase in the excess-profits tax exemption from $10,000 to $25,000 beginning with the tax year 1946 and efforts to make available technical and managerial advice and to aid in financing small businesses are indications of the extensive assistance being offered to small concerns in obtaining a larger volume of business and to enable them to compete more successfully with larger concerns. This is an encouraging trend, for it should be remembered that large businesses are the outgrowth of small ones or combinations of same.
>
> Both large and small business units have existed side by side for a great many years and it is a fairly safe guess that in all probability both will continue in the years ahead. The quality of service does not depend upon size alone. A large business is not necessarily bad, neither is a small business always good. But both have certain advantages over the other which enable them to compete in a free economy without destroying each other.
>
> Since small business does not have easy access to the large capital and investment markets, it has not been able to obtain funds as easily and as cheaply in the past as have many large corporations. This situation has been cited as a reason why the government should establish special financial institutions to help small business. Others advocate a government guarantee of loans and advances to small business.

COMING CONVENTIONS

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, December 4 and 5.

Minnesota Telephone Association, Hotel St. Paul, St. Paul, January 27, 28 and 29, 1947.

Iowa Independent Telephone Association, Hotel Ft. Des Moines, Des Moines, February 5 and 6, 1947.

Illinois Telephone Association, Hotel Pere Marquette, Peoria, April 3 and 4, 1947.

Nebraska Telephone Association, Hotel Lincoln, Lincoln, April 8 and 9, 1947.

United States Independent Telephone Association Executives' Conference, Edgewater Beach Hotel, Chicago, April 14 and 15, 1947.

Indiana Telephone Association (no hotel selected), May 7 and 8, 1947.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 14, 15 and 16, 1947.

In some quarters, the desire to help has acquired a political tinge. And there are still others who oppose any government participation whatsoever.

Before we discard or modify the processes which since the founding of this nation have permitted individuals with business ambitions to build from a wilderness the outstanding economy in world history, we should realize that such an achievement would have been impossible if these processes had been unsound or unfair. In the past the new and small enterpriser had to rely largely on his friends, relatives, and his local bank for venture capital and credit accommodation. This method served as a brake on unwise ventures as the entrepreneur had to convince the people who possessed venture money that he was both worthy of trust and capable. It is to be doubted if any other source of capital could have the facilities of evaluation and appraisal possessed by a man's friends, relatives or his neighborhood bank.

However, in my 35 years of business experience I have observed that honest, ambitious men and women with entrepreneural ideas have difficulty in raising venture capital in times of depression—just the time that more production is required to raise employment and income. Surely there must be some way in which the brain power back of our enterprise system can devise methods of providing capital to worthy people at such times.

In addition to this serious problem so strongly posed by Mr. Calder (with relation to non-regulated industry) is the position of the small telephone company with its rate structure frozen fast by law.

The butcher and his non-regulated friends may freely raise their prices to reflect rising operating costs. They are subject, of course, to competition. They can price themselves right out of the market. This is a valuable check on their operations. The telephone company is usually at the mercy of the state public service commission. Its fate rests in somebody else's hands. The butcher, *et al*, can make their own "packages." The small telephone company has to take whatever is given to it.

Now, it is so easy for the state commissions, with the best intentions in the world, to follow some pattern made by a court or federal commission (with ready access to national reputation, but less claim to an actual economic omniscience). For example, when the Federal Power Commission (which has been almost annually predicting a national electric power shortage since before the war—but which never materialized) keeps dropping its allowance for "return" state commissions may be impressed. The FPC used to give all natural gas companies a 6½ per cent "return" on net original cost. In the Mississippi Fuel Case the allowance slipped to 6 per cent. In the recent Safe Harbor Interstate Electric Case the "return" skidded to 5 per cent.

Lest you think this is a lot of "power" stuff, just keep in mind that the state commissions are probably more influenced by the FPC than by the FCC. There is a temptation for some state commissions to apply the FPC yardstick to the telephone companies—large and small—as well as to the gas and electric companies. Many state commissions, of course, will recognize the need for equitable distinction. The recent penetrating analysis of the rural telephone problem by that well-grounded expert, Commissioner Whitney of the Wisconsin Public Service Commission (given at the Los Angeles Convention of the National Association of Railroad and Utility Commissioners) is encouraging because of its depth of background and breadth of vision.

(Mr. Whitney's address will be published in a future issue of TELEPHONY.)

But it is so politically easy for a state commission to follow federal commission precedent and apply a preconceived pattern blindly to all utilities, large and small. The danger of real hardship for the small telephone company, on this score, must be admitted.

It is doubtless difficult enough for even a large power company regulated by the FPC to get by on a 5 to 6 per cent "return." But how can the little company, with so much more expense (per dollar revenue), hope to break even on such an allowance?

The very fact that a small company has to pay more for financing and credit shows that blind application of the same yardstick to the large and small company is unfair. It costs the average bank about the same money to handle a $10,000 loan as a $50,000 loan. A good many small companies are not even organized in such a way as to show real cause on a strict "original cost accounting" basis. So they are caught in an unfair position as compared with larger companies which have learned the necessity of keeping track of every penny and pin of plant investment.

Well, let's get on to the conclusion. The small telephone companies are in a bad way. Nobody denies that. They are necessary and helpful. Nobody denies *that*. They are faced with a serious economic dislocation in an inflationary trend. And, *no one* will deny that.

So, what to do. Here is a five-point program for what it's worth.

(1) No time should be lost by small companies in instituting rate increase petitions to take care of necessary costs of service and improvements.

(2) The state commission must recognize the peculiar difficulties of the small company. If a 6 per cent return is fair for a large company, an 8 or even 10 per cent return may be an absolute necessity for a smaller company.

(3) Where small companies are really faced with a helpless financial position they should consider the advantages of voluntary union with a neighboring company. Otherwise, public demand for service may lawfully take the decision out of their hands. Marriage by choice and arrangement is preferable to a shotgun marriage by edict of a bankruptcy court.

(4) The small company must evaluate its position with respect to modern demands and modern service. The war is over. People are willing to pay higher rates but only for a higher grade of service.

(5) The balance of the industry has a distinct obligation to assist, in whatever way possible. (Blueprints are obviously impossible here.) The manufacturers can assist by research and distribution on terms which the little companies can meet. The larger Independents can assist through association work designed to get the true picture before the regulatory authorities. Even the Bell telephone people have a definite stake here which cannot be kissed off by saying "I am not my brother's keeper."

As to the last point, Bell people are probably weary of puns about their organization based on that best seller of yesteryear, "For Whom the Bell Tolls." But there is plenty of pertinent significance in the beautiful verse which Ernest Hemingway selected for his popular novel.

The reader may recall the circumstances of that quotation—to the effect that one hears of a funeral, one should not "send to learn for whom the bell tolls; it tolls for thee." The inference is that when any member of the human race dies, all of us who survive also die, just a little bit—*pro tanto*. Biologically speaking, this may be dismissed as poetical fancy. But economically applied it is the gospel truth.

When a small company dies, something dies in all the rest of the community in which it operated. Other businesses must absorb the displaced employes; other businesses must make some provision for handling the service defaulted. The local public must suffer the loss, or at least, transition to alternate service. The small company owners, of course, literally take it on the chin. All told, it's "one world" economically (to borrow the Willkie expression). If we do not firm up the foundation of the small company, the whole system of free private enterprise must suffer.

ABC of the Telephone

By FRANK E. LEE

Part XXIII. Installation and Maintenance of Sub-Station Protectors, Section 2. Section 1 appeared in the November 16 issue, page 16.

THE sub-station protector, according to manufacturers' specifications, is efficient only when it is connected to a low resistance ground.

Since it is necessary that the ground resistance should not exceed five ohms, the resistance of all ground rod installations should be measured.

There are two common methods of measuring ground resistance. For either method two auxiliary reference grounds are used. These grounds are driven to a depth of two or three feet at a distance of five or 10 ft. from the ground being tested. In *Fig. 1*, A is ground being measured, B and C are the reference grounds.

Megger or Direct Reading Method

The Megger or direct reading method of measuring ground resistance is recommended because it indicates accurate direct readings in ohms. There is little change of a mistake as compared to the possibility of an error in arriving at the answer by more complicated methods.

Connect insulated test leads between each of the three grounds and the proper terminals on the testing instrument. Follow instruction supplied by the manufacturers of these instruments. A hand generator or battery supplies the test current. The reading of the instrument meter is the resistance of the ground being tested.

Voltmeter-Ammeter Method

A voltmeter, ammeter and dry cell battery or a known voltage battery and ammeter are used in this method. Use Ohm's Law, $R = \frac{E}{I}$, in which R is resistance, E indicates volts, and I indicates amperes, to find the resistance between the various rods. For a complete discussion of Ohm's Law see Part III appearing in the August 12, 1944 issue.

Using Ohm's Law, determine resistance between rods A and B. This is r. Determine resistance between rods A and C. This is r^1. Determine resistance between rods B and C. This is r^2. Then the formula to determine the resistance of rod A (R) is as follows:

$$R = \frac{r + r^1 - r^2}{2}$$

As an example, assume r is 22 ohms, r^1 is 24 ohms and r^2 is 28 ohms. Then,

$$R = \frac{22 + 24 - 28}{2} = \frac{18}{2} = 9 \text{ ohms.}$$

This is the resistance of the permanent ground A.

When the resistance of the permanent ground is more than five ohms, corrective measures should be taken to lower the ground resistance.

Three methods of lowering ground resistance are available. The one to use depends to a great extent upon local conditions.

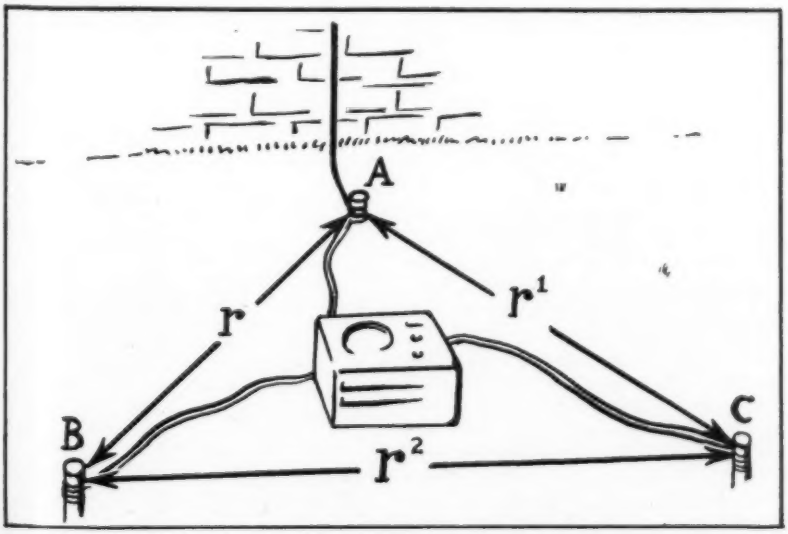

Fig. 1

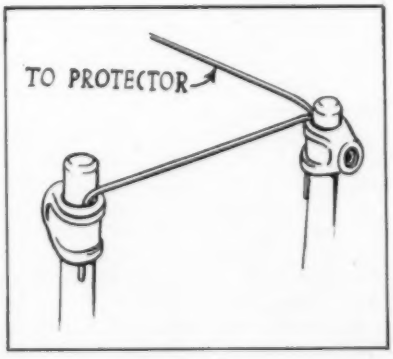

Fig. 2

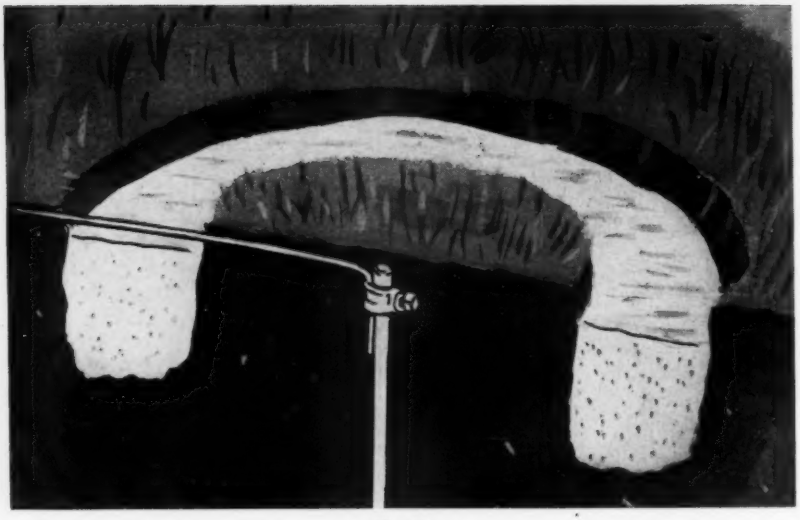

Fig. 3

Additional Ground Rods

Additional standard five-foot telephone ground rods can be used where the resistance of the first rod is not more than 25 ohms, or where it is impractical to drive a deeper ground. In this method, a second ground rod is placed at least six feet from the first rod and is connected to the protector ground wire (see *Fig. 2*). The combined resistance of the two rods in parallel will result in an approximate 40 per cent reduction in the ground resistance of a single rod. If necessary, additional

Fig. 4

ground rods connected in parallel with these two rods will further lower the ground resistance.

Longer Ground Rod

In some localities longer ground rods are required to reach permanent moisture bearing soil. Generally, a 10-ft. rod will produce the desired results. However, sectional rods are available that make possible the installation of a deep ground extending 30, 40 or 50 ft. below the earth's surface.

Increasing the depth of the ground rod installation is recommended, rather than to attempt to improve the ground by increasing the diameter of the rod being used.

Soil Treatment

Often a ground must be installed in rocky soil or in places where solid rock is a few feet below the surface. Conditions of this nature rule out deep grounds and the installation of additional rods does little to lower the combined resistance of the ground.

In these cases the answer lies in soil treatment. The principle of soil treatment involves the addition of chemicals to the soil to draw moisture to the rod installation from surrounding areas. Generally speaking, adding moisture to the soil tends to lower the ground resistance.

Common rock salt, copper sulphate and crystals of magnesium sulphate are suggested as chemicals to be used for soil treatment. Do not place the chemicals in direct contact with the rod. Instead, treat the soil either by the trench or the container method. The trench method is most efficient whereas the container method can be used to advantage where space is limited.

Trench Method (See *Fig. 3*)

Lay out a trench by outlining two circles around the rod. The inner circle to be 1½ ft. in diameter and the outer circle 3½ ft. in diameter. Carefully remove the sod between the two circles and dig a trench to a depth of 16 or 18 ins. Now, fill the trench to a depth of 10 ins. with soil treating material. Replace sufficient dirt to permit proper replacement of the sod. The ground wire to the protector usually can be placed in this layer of dirt or just under the sod. Replace the sod, tamp down smooth and dispose of the excess dirt.

Soak the treated area with water after the installation is completed. Thereafter, normal rainfall should keep the area sufficiently moist.

Container Method (See *Fig. 4*)

Where there is insufficient space to permit the use of an encircling trench, the soil treating material can be placed in a standard length of eight-inch glazed tile. Place the tile approximately four inches from the rod and flush with the surface of the ground.

Next, fill the tile to within three or four inches of the top with the soil treating material. Fill the tile levelfull with water and cap with a perforated cover similar to that used in a basement floor drain.

As the original water and subsequent rain water soaks through the treated area, it carries the treating solution into the ground around the rod. The treated soil draws moisture from the surrounding area. As stated before, this action lowers the ground resistance. After the solution has filtered through the soil, it has little corrosive effect on a standard copper ground rod.

Protector ground rods that have been installed in treated earth should be inspected at least once each year. Dur-

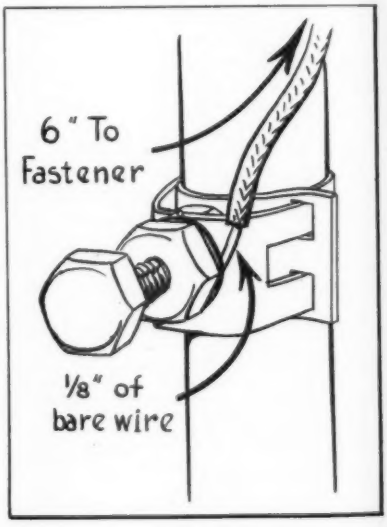

Fig. 5

ing the first inspection it may be necessary to add soil treating material to the trench or container. After that, additional treatment may not be required for two or three years. However, to be sure, make the inspection on each maintenance visit or at yearly intervals.

Ground Clamps

Where the ground connection is to be made to a cold water pipe or other appropriate grounded pipe, use an ap-

proved station ground clamp. There are several types and styles of station ground clamps on the market today, however, a few general suggestions apply to all makes.

The pipe should be cleaned thoroughly where the clamp is to be installed. Handy strips of abrasive cloth are available for use in this operation. Most water pipes are galvanized, therefore, it is necessary only to clean away the dirt or film that has settled on the galvanizing. Galvanizing is a zinc coating which is a good conductor of electricity. Some water pipes will be found coated with any one of many varieties of paint applied over the galvanizing. Before attempting to polish the surface of painted pipe, scrape away the paint with a hand file or similar scraping tool. Be careful not to break through the galvanizing or to pierce the walls of lead pipes.

Condensation usually forms on cold water pipes during humid summer days, therefore, attempt to place the set screw of the clamp on either side or on top of the pipe. If the clamp is directly under the pipe, the set screw and wire terminating nut and washer will remain wet and soon will become corroded. This could cause a high resistance ground connection which should be avoided. If a strap type clamp is used, cut off any excess or unused portion of the strap after the clamp is installed.

Ground Wire

When fastening the ground wire to the ground clamp, remove the outer insulation of the wire and thoroughly clean the conductor. Place the wire under the washer and three-quarters of the way around the terminating screw in the direction the nut or screw tightens. Leave about one-eighth inch of bare wire between the terminal washer and the insulation of the wire (see *Fig. 5*). This helps prevent bits of insulation from becoming lodged under the terminating nut or washer.

The size of ground wire to use for the station protector ground depends upon the number of protectors installed, or which may be installed, at the same location. Following are typical ground wires with the maximum number of protectors each serve:

Size of Wire, B and S Gauge	*Maximum Number Of Protectors*
No. 18	1
No. 14	3
No. 12	5
No. 10	8
No. 6	Any Number

Often it is desirable to regroup or relocate one or more station protectors to secure a better plant maintenance condition. Where this type of work is planned, generally, it is advisable to run new protector grounds. If this is done, select the proper size wire to give adequate protection. Also, when multiple protector installations are found with an improper size ground wire, make arrangements to have the condition corrected as soon as possible.

The National Board of Fire Underwriters specifies that protector ground wires should be run open except when they are placed in conduit of approved construction. This means that ground wires should not be fished over ceilings or between walls.

Proper Clearance

If possible, proper clearance should be maintained between ground wires and foreign wires or other obstructions. In this respect, ground wires are considered the same as other inside or station wires. *Table I* lists typical minimum clearances and also the protection that should be installed if these clearances cannot be obtained.

It will be noted from a study of *Table I* that, among other things, separation or protection is required as a ground wire passes an exposed telephone drop wire.

A ground wire may be touching a station or instrument wire, it may pass through the same hole or be placed in the same wire moulding with the instrument wire, however, in open runs the ground wire should be placed under separate fasteners as required. Also, it is well to note that ground wires should not be placed in ring runs.

Table I

Clearances for Telephone Ground Wire or Protection to Apply

Crossing or Paralleling This Obstruction	*Minimum Clearance*	*If Not Obtainable, Apply This Protection to Wire.*
Lightning Rod System	6 Ft.	None. Maintain 6-ft. clearance.
Other Ground Rod	6 Ft.	
Neon Signs	6 In.	Use lead cable and ground sheath.
Radio Wiring	4 In.	Porcelain tube over wire with a 2-in. lap each side of obstruction.
Open Power Wiring (Not over 750 volts)	2 In.	
Open Signal Wires (Run beyond building and not equipped with approved protection)	2 In.	
Exposed Telephone Wiring	2 In.	
Steam Pipes (Uninsulated)	½ In.	
Other Foreign Wiring and Ground Wires (Except radio)	½ In.	Over two layers of rubber tape place two layers of friction tape; 2-in. lap each side of obstruction.
Open Signal Wires (Inside or equipped with approved protector at building entrance)	½ In.	
Metal Beams	½ In.	
Pipes (Gas, water, oil, sewer)	½ In.	
Electric Conduit (All types)	½ In.	
Through Metal Gratings		Two layers of friction tape; 2-in. lap each side of obstruction.
Behind Fire Shutters		
Around Sharp Corners		

Instead, use standard ground wire fasteners.

The ground wire should be fastened securely between the protector and ground clamp. Where the wire is within five feet of the floor the fasteners should be spaced 16 ins. apart. Over five feet from the floor the spacing can be increased to 24 ins. if local conditions permit. When spanning floor joists, place a fastener at each joist. In runs of this type attempt to stay within three inches of a wall to reduce the possibility of the ground wire being broken. Typical ground wire fasteners are ground wire clamps, ground wire nails and ground wire staples. Clamps should be used on plaster on lath or on masonry construction. Nails or staples are suitable for wood. When clamps are installed on common bricks with lead anchors and wood screws, locate the anchors in the center of the bricks and not in the mortar.

It is permissible to change the direction of a run of ground wire, such as from horizontal to vertical. However, any turns in the ground wire run should not exceed 90 degrees. Generally, it is advisable to place a fastener approximately one inch in each direction from a corner to provide ample support at the turn. In this connection, there should be no spirals or kinks in the wire after it is installed.

The ground wire fastener nearest the ground clamp should not be closer than six inches to the clamp. This distance is suggested because if the pipe should vibrate, the wire would not be broken. Where the pipe has a tendency to vibrate excessively, place the ground clamp near a pipe support.

Slack Wire

Slack wire can be placed in the form of a smooth curve halfway around the pipe or in any other suitable fashion. As a precaution, do not wrap the wire around the pipe more than a half turn to provide slack. At the protector, slack wire can be provided by a well fastened slack loop (see *Fig. 6*). By the use of these two methods, sufficient slack wire can be left at each end of the ground wire run. A reasonable amount of slack wire is worthwhile because, if the wire breaks or is reinstalled, a new connection can be made without splicing or rerunning the wire.

Splicing

While on the subject of splicing ground wires, it is well to note that ground wires should not be spliced unless more than 10 ft. of ground wire is to be re-used at either end of the run. If this length of ground wire must be refastened, then it is best to replace the entire run with new wire in one continuous piece. When splicing ground wire, as often will be required in maintenance visits, be sure the new wire is of the same gauge as the old wire. Here, again, compression type sleeve or twisted sleeve splices will prove economical.

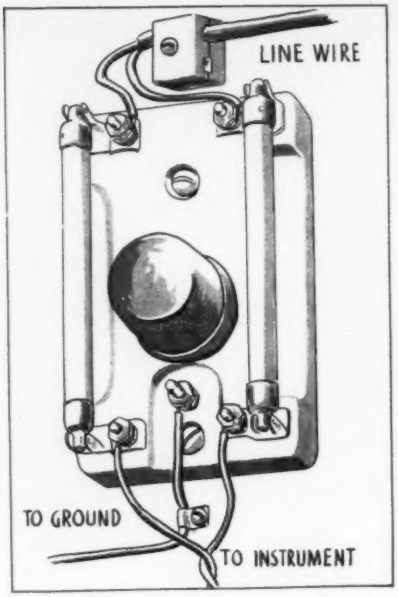

Fig. 6

Many operating companies are finding it expedient to place a warning tag at all protector ground clamps to advise building owners, plumbers or others to call the telephone company if the clamp must be removed or if the wire is broken. This practice is recommended because on some lines, where ground is not used in the signaling circuit, a protector ground could be open for a long time before being discovered.

After the protector and station ground is installed, the drop wire should be connected to the line wire terminals. On common battery exchange lines it is advisable to use a uniform method of terminating tip and ring conductors. Some companies make it a practice to place the tip conductor on the left of all horizontal terminal pairs or on the top post of pairs arranged in a vertical line. This same procedure is carried through at the protector. Some cable pairs may become reversed during a splicing operation. To correct this condition a uniform procedure would be to straighten out the reversal at one particular spot, such as the line side of the station protector. Where a protector was not involved, the reversal could be cor-

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SO GREAT has been the demand for copies of TELEPHONY containing Mr. Lee's previous 21 installments in his series, "ABC of the Telephone," that the supply of most of the issues has been exhausted and it no longer is possible to fill current requests for them.

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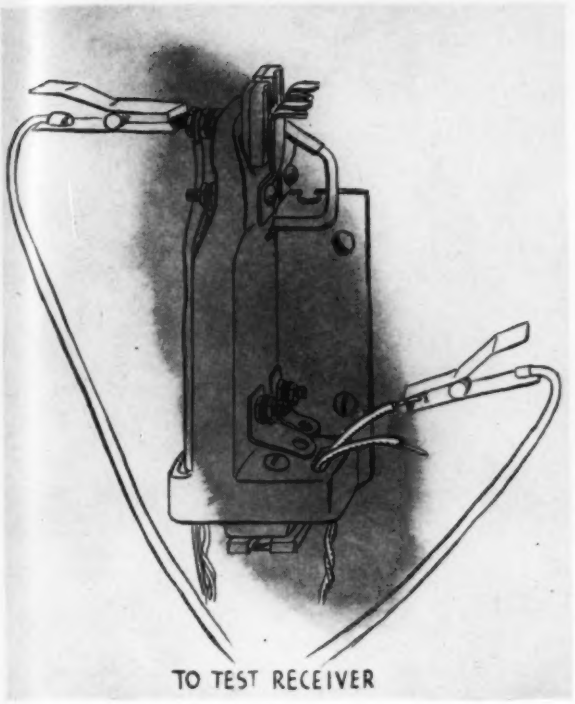


Fig. 7

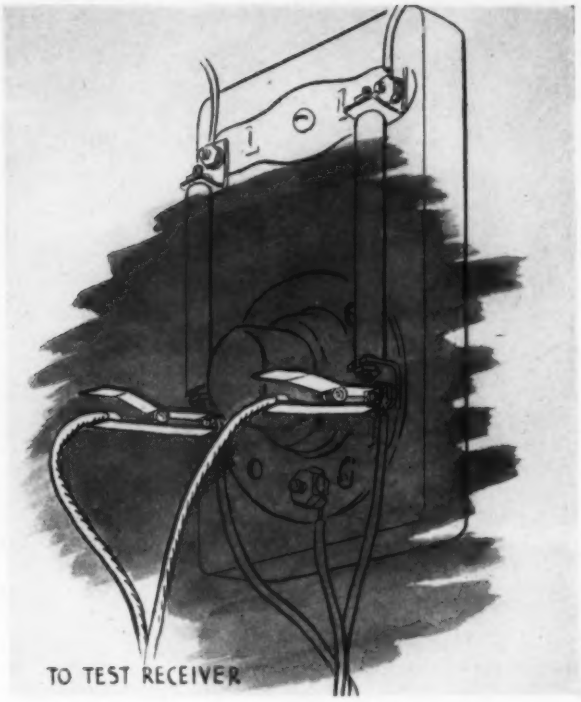


Fig. 8

rected at the last terminal appearance of the cable pair.

Testing

Assume in a particular exchange that battery is on the ring conductor of the circuit and ground on the tip. Then a test can be made by placing one clip of a talking test set on the protector ground post and touching first one then the other of the two drop wire conductors (see *Fig. 7*). A click will be heard in the test set receiver both when the ring conductor is touched with the test clip and when the clip is removed.

A drop may be used on one cable pair that is "straight" all the way through. "Straight" means that tip and ring appear in their proper position at each cable terminal. However, because of a cable change or a transfer of the line to a new cable pair, the drop may be used on a reversed cable pair. In this case, to keep the instrument wires straight at the telephone, the drop should be reversed at the station protector. For this reason, cut each drop conductor the same length at the protector. The line terminals generally are close enough so that a smooth curve will be all that is needed to care for the slack in what normally would be the shorter of the two conductors (see *Fig. 6*).

Fuses

At most station protectors the line circuit passes through fuses. Normally, these fuses are of the closed cartridge type with either a bronze wire or a lead alloy element. If a fuse wire in the closed cartridge becomes loose for any reason, the trouble cannot be detected by a visual inspection. To be sure that fuses are intact, a test should be made with the drop terminated. Connect the clips of the test set across the line at the station wire end of the protector. On manually operated lines the operator should answer. On dial central office lines, dial tone should be heard. While checking the line with the operator or after dial tone is heard on the line, solidly tap each fuse with a screwdriver handle or similar tool (see *Fig. 8*). If a fuse wire is loose, it will vibrate or bounce in the shell and the consequent line cut-out will be heard in the test receiver. Replace any fuse that proves defective during this test.

Sub-Station Protector Maintenance

(1) Check the ground clamp connection or ground rod installation to make sure it meets all requirements as previously mentioned. If the ground clamp is corroded, replace it.

(2) Inspect the ground wire run. Replace or tighten any loose or missing fasteners.

(3) Check for proper clearances from foreign wires or objects. (A new electric conduit or water pipe may have been placed since the original ground wire was installed.) If because of alterations or other changes a shorter ground wire run is possible, reroute the wire to the new ground connection.

(4) Inspect the protector parts. Replace any badly chipped or cracked protectors. Small chips, however, do not impair the efficiency of porcelain base protectors.

(5) Test the protector fuses and be sure all connections are clean and tight. If it is a practice to keep tip and ring straight at all connections, correct any discrepancies that may be found.

(6) Check the carbon blocks in the open space cut-out. Clean or replace the blocks as indicated by this inspection.

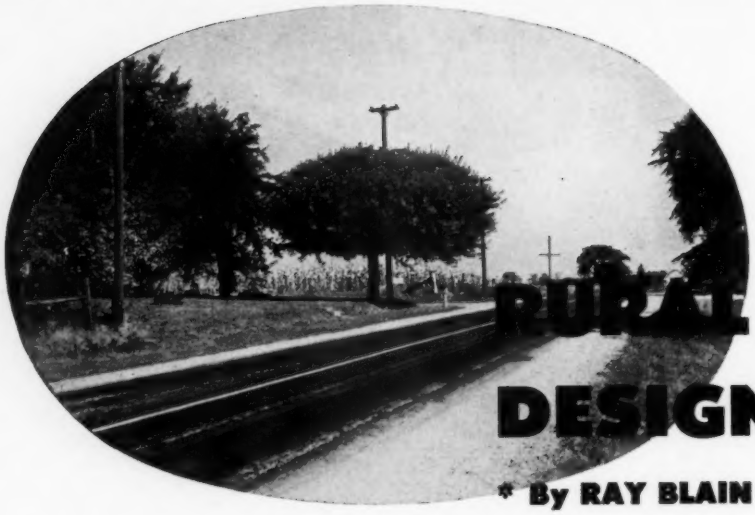
(7) Replace any cracked or missing protector caps or covers, if used. If the carbon chamber should be sealed with a rubber or similar gasket, replace any defective or missing gasket.

(8) Remove all dust and dirt from the protector. A fairly stiff horsehair or nylon bristle brush, either one inch wide or one inch in diameter is suitable for this purpose.

The foregoing inspection routine, if performed at all subscriber stations during normal maintenance visits, will insure that all protectors and station ground wires are in perfect condition.

Sub-station protectors are important elements in the subscriber station wiring layout and the manner in which they are installed and maintained should be of foremost concern to all plant forces of every telephone operating company.

(To Be Continued)



RURAL LINE DESIGN FEATURES

* By RAY BLAIN

BEFORE a new rural line is constructed, or an old one rebuilt, certain design features must be agreed upon. Local conditions usually will govern the normal design. However, the following rules, which are rather general in nature, are offered as a guide.

The maximum number of subscribers to be permitted on a line. The present-day trend is to limit the total number of subscribers on one line to eight. Today people use the telephone more than ever before and, if a larger number of subscribers is permitted on any one line, the service to all will be reduced materially. It always is most annoying to find a line busy for long periods when it is desired to make a call, and it is just as annoying to others when they wish to call you.

The type of line to build. There are, in general, three different types of rural line design now in common use. These are: Cable, open wire and buried wire. The line may be a combination of all three or constructed entirely of any one type.

Cable. Either aerial or underground cable ordinarily is used near the exchange. This cable may vary from a few hundred feet to several miles in length. Cable is used more extensively in densely populated communities and where tree clearance cannot be obtained for open wire.

Open wire lines. This type of plant normally is used to extend lines from the cable and may be used for both main and branch leads as indicated in *Fig. 1.* The line may be steel, copper or copper-clad steel wire.

Steel wire. This type of wire is available in several different weights of galvanizing, designed to meet variations in atmospheric conditions which may affect its physical life.

The light weight galvanizing will, under average conditions, have a service life of from 15 to 20 years before rust conditions become serious enough to affect its transmission qualities.

The use of compression type sleeves avoids unbalances which previously were experienced with rusted joints.

Although steel wire is available in various sizes, No. 109 generally is recommended for rural line use. High strength steel wire is recommended for long span construction which provides a relatively inexpensive type of rural line plant.

Opinions differ greatly as to the recommended span length best suited for rural plant. In general, however, No. 109 galvanized steel, or No. 109 hard drawn copper wire, may be strung on 175-ft. spans in sleet areas or 250-ft. spans in the no-sleet areas. The No. 109 high tensile strength steel may use 300-ft. spans in sleet areas and 400-ft. or more in all other areas. Detailed information on span lengths for various types of wire can be found in the article, "Long Span Construction," published in the April 27 issue of TELEPHONY.

Copper wire. This type of line is considerably more expensive than steel wire lines, due to the higher cost of the wire itself. The transmission losses and the direct current resistance of copper wire are considerably lower than steel, and copper may, therefore, prove more economical for use where transmission and/or signaling improvements are required.

Copper-clad steel wire. This type wire is considered ideal for use when better transmission plus increased strength are a necessity. Copper-steel wire proves ideal for long span construction and has been used extensively for this purpose.

Buried wire. This rubber insulated paired wire has been used widely for the past several years on a field trial basis with varying results. The desirability of this type of plant will differ materially with local conditions. Where soil conditions are satisfactory for such construction and trees or other conditions are unsuited for open wire, the buried wire may prove an advantage. It must be remembered, however, that transmission losses in buried wire relatively are high as compared with open wire construction.

Pole selection. Good poles always prove to be the best investment in the long run. Make certain they are heavy

THANKS TO USITA

The illustrations accompanying Mr. Blain's timely and constructive article are reproductions of drawings used in the United States Independent Telephone Association's booklet, "Farm Telephone Manual." We acknowledge with thanks the cooperation and courtesy of the USITA in permitting us to reproduce these illustrations.

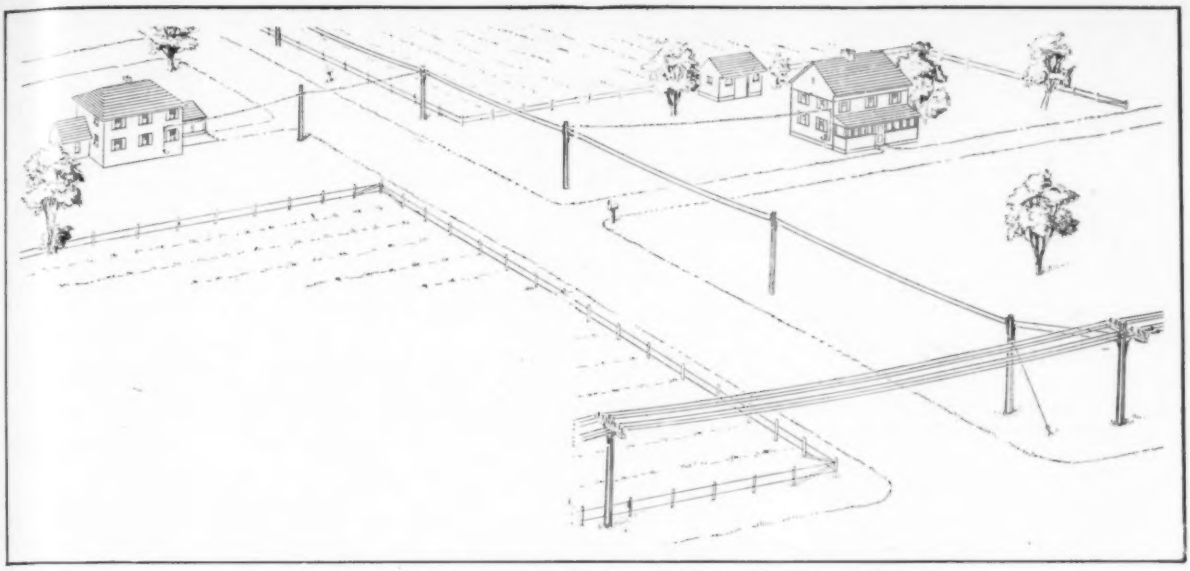


Fig. 1. Typical open wire rural line system showing main line, secondary line and drop wires.

enough to carry the required load with an ample margin of safety and long enough to provide proper ground clearance.

Treated poles are well worth their additional cost as, compared with untreated poles, they will give many additional years of trouble-free service.

When poles are to be used to support bracket circuits, they should have a top diameter of at least four inches. When a crossarm is used, or when it is expected that bracket circuits later will be replaced by crossarms, a top diameter of at least five inches should be specified.

Heavier poles should be selected for all locations where extra strain will be encountered such as corners, junctions, railroad or river crossings and terminal or deadend locations.

Clearance. The provision of proper clearances is most important for any telephone line if it is to be maintained in such a manner as to provide satisfactory and uninterrupted service.

Safe separation from power wires not only is necessary for personal safety, but is required to prevent fire hazards. In general, telephone wires should be below and at least two feet from power secondaries, and four feet or more below all primary power circuits.

If poles selected are of proper length, they may be set to a correct depth and also provide proper ground clearance for the line wires. *Fig. 2* indicates a need for clearance of 18 ft. for line wires on brackets over highways and roads. Poles at least 25 ft. in length, in most cases, should be used for this purpose.

Fig. 3 indicates the need of a 15-ft. clearance over driveways and fields where farm machinery may have occasion to pass under the line. Poles should be at least 22 ft. long in order to provide this clearance.

Fig. 3 also indicates that a clearance of only eight feet may be required where vehicles or farm machinery will not have occasion to pass under the line. Poles need not be over 14 ft. long to provide this clearance.

Guying. Someone has said that a line is never any stronger than its weakest guy. This is true and corners must be firm if a line is to be well maintained because corners which are not properly guyed will not hold.

Corner poles in general should be set in about one foot as shown in *Fig. 4*. This arrangement permits: (1) The top of the pole to be pulled or raked back into line by the guy, and (2) the

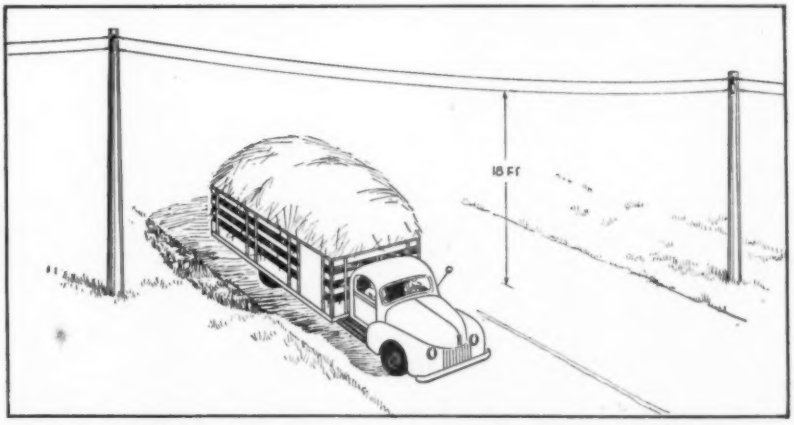


Fig. 2. Eighteen-foot clearance for line wires over highways and roads is essential.

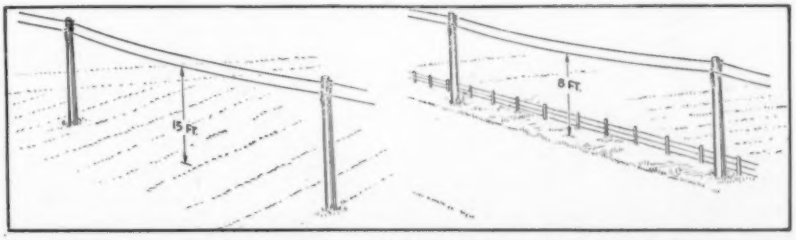


Fig. 3. Clearance required over driveways and fields where farm vehicles pass and clearance along a fence where it is impossible for anyone to pass under the line.

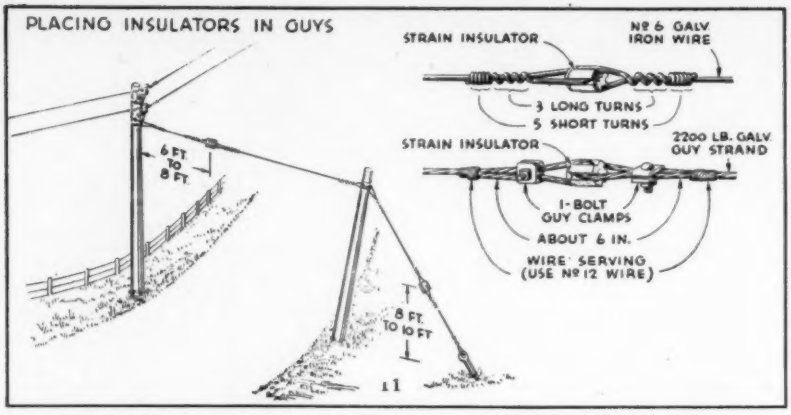


Fig. 5. Method of placing insulators in guy wires when installed near power lines.

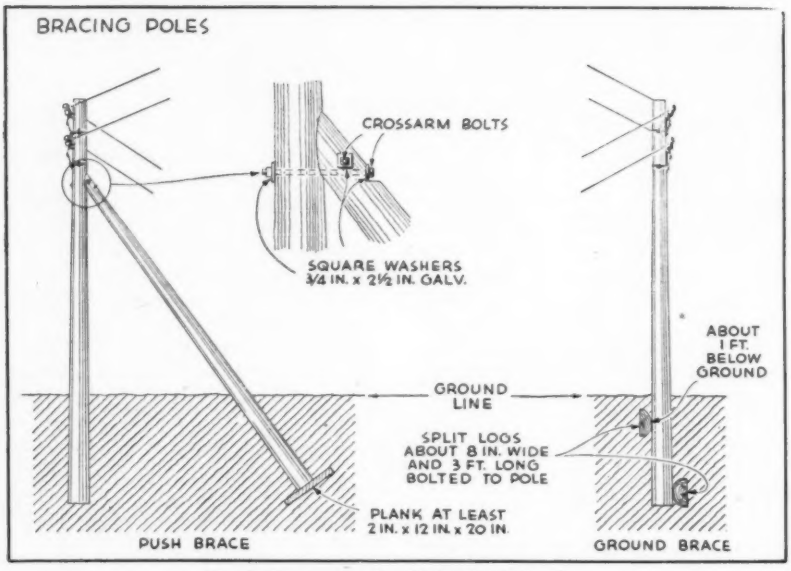

BRACING POLES
CROSSARM BOLTS
SQUARE WASHERS 3/4 IN. x 2½ IN. GALV.
ABOUT 1 FT. BELOW GROUND
GROUND LINE
SPLIT LOGS ABOUT 8 IN. WIDE AND 3 FT. LONG BOLTED TO POLE
PLANK AT LEAST 2 IN. x 12 IN. x 20 IN.
PUSH BRACE
GROUND BRACE

Fig. 6. Two approved methods of pole bracing.

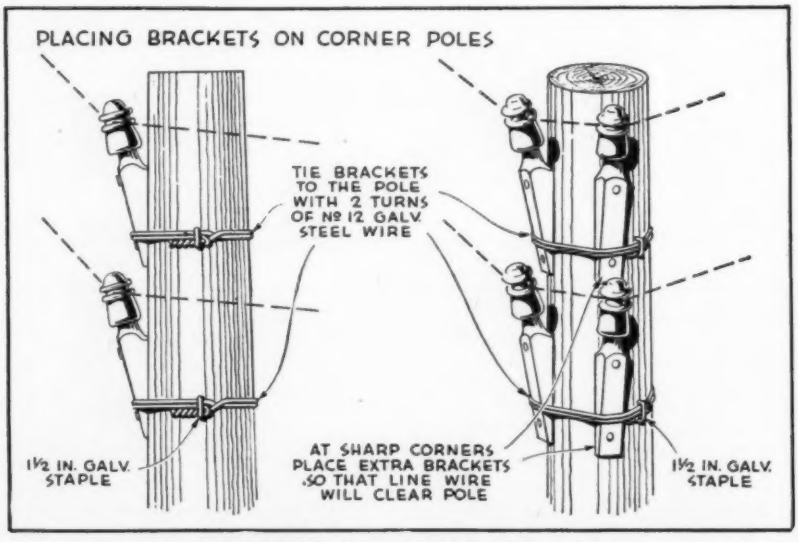

PLACING BRACKETS ON CORNER POLES
TIE BRACKETS TO THE POLE WITH 2 TURNS OF Nº 12 GALV. STEEL WIRE
1½ IN. GALV. STAPLE
AT SHARP CORNERS PLACE EXTRA BRACKETS SO THAT LINE WIRE WILL CLEAR POLE
1½ IN. GALV. STAPLE

Fig. 7. Single and double wood brackets installed on corners.

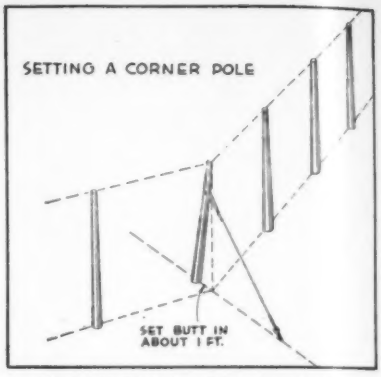


Fig. 4. Method of raking a corner pole.

pole and anchor to settle or set without appreciably slacking the line.

Various types of anchors may be improvised for rural line construction. It usually is considered best and cheaper, however, to procure standard patented type anchors from telephone supply houses.

Insulators should be placed in all guys over roads and in guys to anchors when there is a power line on the other side of the road. *Fig. 5* indicates an approved manner of installing these insulators.

Pole bracing. Corner and deadend poles often are located where space will not permit proper guying by the conventional method. In these cases, pole bracing may be employed by one of the methods indicated in *Fig. 6*.

Crossarms and brackets. Line wires usually are supported either by wood brackets or crossarms. The proper installation of these fixtures is necessary if the line wire is to be tensioned and spaced correctly. Single and double brackets installed to provide additional strength on a corner are shown in *Fig. 7*. The wire ties shown are simple to install and increase considerably the holding power of the brackets.

Crossarms should be equipped with wood pins and braces before they are installed on poles. Double crossarms or a single crossarm with a back brace should be used on all deadend poles and heavy corners.

Wire stringing. Ample sag should be provided between poles in order to prevent breakage due to contraction in cold weather. Sag tables for various types of wire used for rural line construction were published in the article, "Long Span Construction," April 27 issue of TELEPHONY. The approved method of measuring sag in line wire is shown in *Fig. 8*.

Transpositions and wire positions. It is most important that the wire position at corners be arranged so that they pull against the insulators.

The tie wire always should be of the same material as the line wire.

Transpositions are necessary to reduce inductive interference from nearby power lines. The position of two wires on a bracket circuit should be changed with respect to each other about each 800 or 900 ft. as indicated for wires "A" and "B" in *Fig. 9*.

Special and more complicated transposition systems are necessary whenever several telephone circuits are run parallel on the same lead. These systems should be engineered as required to meet special or local conditions.

Branch line connections. The proper deadending of branch circuits and their connection to the main line circuits is most important. Bridging connectors or compression type connectors should be used to connect the branch lines.

Drop wire. It is essential that the wire which drops from the line to the house is installed properly as it can cause serious trouble. If open wire is extended directly to the house, it may cause vibration or "humming" trouble which proves to be annoying. For this reason, the drop is usually twisted pair or parallel type wire. The drop wire span should not exceed 150 ft. If the distance is greater, poles should be set, as required, to reduce the length of the spans to 150 ft. or less. The drop should be strung so as to have a sag of four to five feet in each span.

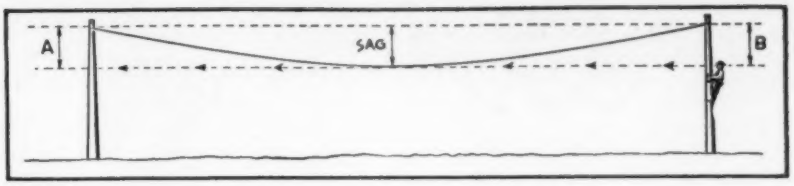


Fig. 8. Method of measuring sag in line wire.

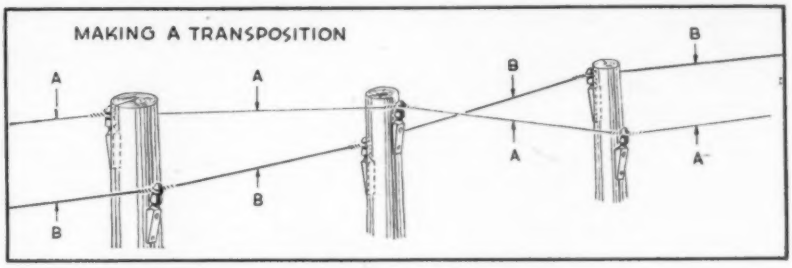


Fig. 9. Transposition of a bracket circuit.

Drop wire should be attached firmly to the pole by a knob, wood bracket or a drop wire clamp held in place by a drive hook. The conductors should be attached to the line wires by the use of bridging conductors.

Protector installation. All telephone installations on rural lines should be equipped with an approved type of station protector. These protectors should be of the fuse and open space cut-out type. When power circuits come in contact with the telephone lines, the fuses in the station protectors will operate and disconnect the telephone from the current carrying wires. This action

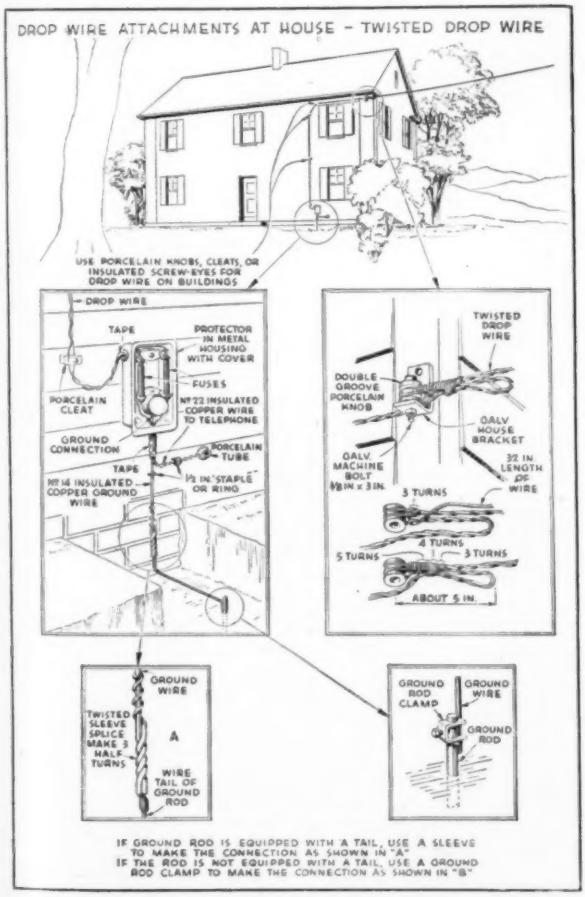

DROP WIRE ATTACHMENTS AT HOUSE - TWISTED DROP WIRE
USE PORCELAIN KNOBS, CLEATS, OR INSULATED SCREW-EYES FOR DROP WIRE ON BUILDINGS
DROP WIRE
TAPE
PROTECTOR IN METAL HOUSING WITH COVER
FUSES
PORCELAIN CLEAT
No 22 INSULATED COPPER WIRE TO TELEPHONE
GROUND CONNECTION
PORCELAIN TUBE
TAPE
No 14 INSULATED COPPER GROUND WIRE
½ IN. STAPLE OR RING
TWISTED DROP WIRE
DOUBLE GROOVE PORCELAIN KNOB
GALV. MACHINE BOLT ⅜ IN. x 3 IN.
GALV. HOUSE BRACKET
3½ IN. LENGTH OF WIRE
3 TURNS
4 TURNS
5 TURNS
3 TURNS
ABOUT 5 IN.
GROUND WIRE
TWISTED SLEEVE SPLICE MAKE 3 HALF TURNS
A
WIRE TAIL OF GROUND ROD
GROUND ROD CLAMP
GROUND WIRE
GROUND ROD
IF GROUND ROD IS EQUIPPED WITH A TAIL, USE A SLEEVE TO MAKE THE CONNECTION AS SHOWN IN "A"
IF THE ROD IS NOT EQUIPPED WITH A TAIL, USE A GROUND ROD CLAMP TO MAKE THE CONNECTION AS SHOWN IN "B"

Fig. 10. Protector and ground installation at a rural line station.

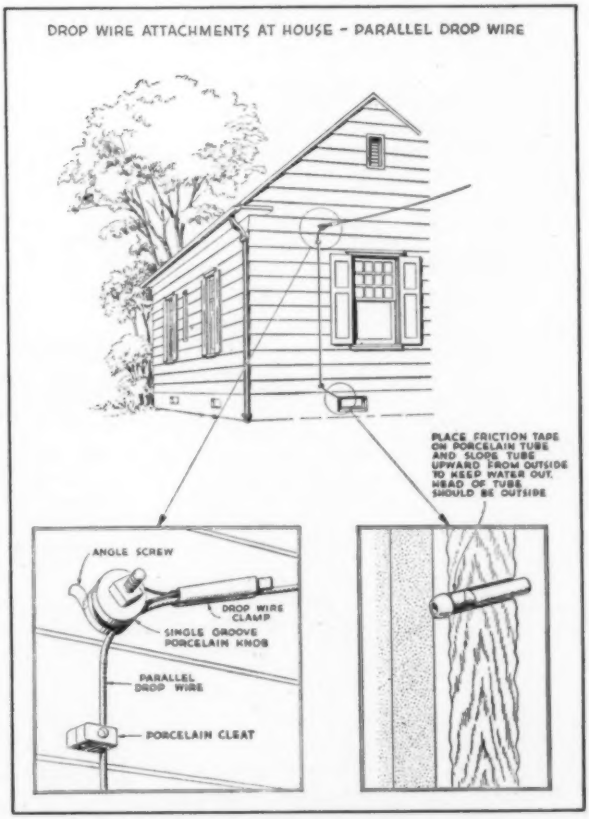

DROP WIRE ATTACHMENTS AT HOUSE - PARALLEL DROP WIRE
PLACE FRICTION TAPE ON PORCELAIN TUBE AND SLOPE TUBE UPWARD FROM OUTSIDE TO KEEP WATER OUT. HEAD OF TUBE SHOULD BE OUTSIDE
ANGLE SCREW
DROP WIRE CLAMP
SINGLE GROOVE PORCELAIN KNOB
PARALLEL DROP WIRE
PORCELAIN CLEAT

Fig. 11. Drop wire termination and building entrance.

not only saves the telephone from damage, but also protects occupants of the house from possible injury. The protector may be located inside the house or on the outside by the use of a weatherproof protector provided for this type of service.

Ground connection. The ground connection for a station protector is most important, for its successful operation depends entirely upon this feature.

A cold water pipe having 10 ft. or more of pipe buried in the ground will make a satisfactory ground connection. The ground wire should be connected to the cleaned surface of the pipe by an approved ground clamp. Never attempt to solder a ground wire to a pipe.

A ground rod five feet in length may be used for a ground connection when a suitable water pipe is not available.

No. 14 rubber covered copper wire should be used to connect the protector ground to the ground clamp or rod. *Fig. 10* indicates in detail the various operations required in the installation of a rural telephone station.

Fig. 11 shows an approved method of terminating drop wire on a house and the drop wire entrance through the wall.

Installing the telephone. The telephone generally is located as and where required to suit the customer. It should be pointed out, however, that this location should be such that the bell can be heard by the occupants. The telephone should not be located where it will be damaged from rain if a window is left open. Locations also should be avoided where the telephone or the user can come in contact with pipes, radiators, other grounded objects or electric fixtures.

Due to the usual long distances covered by the average rural line and the widely separated subscribers, the cost per station is normally high to provide the necessary good grade of service. If good service is to be furnished economically, it is, therefore, most important that the line design and its transmission qualities be considered and coordinated carefully. To successfully accomplish this purpose, it is necessary to strike a happy medium between cost and grade of service by selecting a suitable design of rural plant which can be maintained economically.

CUTIES **BY E. SIMMS CAMPBELL**

"I won't be much longer—oh, by the way, has any one got 20 nickels for a dollar?"

TELEPHONE TECHNIQUE

"Mabel is the pilot of a PBX telephone switchboard and has something on her chest besides her transmitter that she must get off. There are some don'ts for the people who use the telephone which will improve the service and help quiet Mabel's screaming nerves.

"Don't carry on a conversation with someone in the room while waiting for Mabel to answer. She loses time trying to break into the conversation to get your number. Whistlers should be shot at sundown. You expect Mabel to answer instantaneously or sooner; then be just as prompt and snap the number to her fast. Skip the long phrases, such as 'please let me have' or 'see if you can get me', etc. Don't place your call and then hang up and make her ring you back when your party answers. That habit is murder; makes double work and wastes everyone's time. Only the head men whose time is worth money should be permitted to do this. Quit asking for the time every few minutes. You ain't going anywhere anyway. Go buy a watch or ask the company for a clock. Flash Mabel back with a slow, up-and-down motion of the hook so the light blinks at her. A quick bang on the hook will not register long enough for her to see it, especially if she chews gum. Heavy gumchewers partly close the eyes with each bite. Speak into the transmitter; shift your tobacco to one side and speak clearly; don't mumble.

"That should hold 'em, Mabel. Whaddaya doing Saturday night?" *"DIOGENES."*

—The Bakersfield Californian.

>> *Success comes to a man unseen—we only see it when it goes.*—**Northwestern National News.**

THE PLANT MAN'S NOTE BOOK

BY
RAY BLAIN
TECHNICAL
EDITOR

WE hear rumors from time to time that electric fences used by farmers cause interference on rural telephone lines. The manufacturers of electric fences whom we have consulted claim that their equipment cannot possibly cause interference. If any of our readers actually have experienced telephone interference from an electrical fence, won't you please tell us about it?

• • •

Telephone operating men frequently voice a need for an inexpensive carrier system of three or more channels for use in providing rural telephone service. We agree that such a system has merit and know that several companies have conducted some experiments with a view to developing such a system. We do not agree, however, that if such a system could be perfected it would prove an answer to all of our rural line problems.

Even if a carrier terminal of this type could be produced to retail for $50, or less, the maintenance of simple electronic equipment in continuous operation is no elementary problem. An uninterrupted power supply is an absolute necessity. Open wire lines to accommodate a carrier system should be built fairly well, well insulated and properly transposed.

Carrier systems of several different types now are available and certainly have proved their worth on toll lines or on trunk circuits of considerable length. It is the opinion of the writer that for the present, at least, carrier systems should be confined to this service and that we should continue to provide physical circuits for rural line service.

• • •

While on an automobile trip recently, the writer noted that, in several states, tree trimming is neglected sadly. In many instances, trees have been permitted to grow through and several feet above rural lines. We know that labor shortages undoubtedly have been responsible to a great extent for this condition which really is serious. Good glass insulators used to hold the line wires away from dry poles and crossarms do very little good if they are permitted to contact green trees. The leakage of small voice currents due to tree contacts always proves a serious impairment to transmission.

• • •

We are advised by a small operating company that it is their common practice to dig 90 holes in a day on a rural line, with two men and one of the lightweight power driven earth boring drills. These holes are of sufficient size and drilled to the required depth. This certainly is a faster and cheaper method than digging holes by the old back breaking shovel and spoon procedure.

• • •

The REA now is building some of its lines along highways back in the field about 50 ft. from the property line. This plan has numerous advantages. It provides greater separation from telephone lines and causes less power induction interference. Better tree clearance is provided. Lines are clear of future road widening operations. In fact, such an arrangement has so many advantages that it might prove desirable to adopt a similar plan for rural telephone line construction.

Well designed deadend. The pole is well guyed to a good anchor. To play safe, a guard is placed on the guy.

• • •

Recently, we observed a man on a ladder that was leaned against a pole, and he was busy making repairs on a rural line. There was a time, in our younger days, when we would have considered this a disgrace for then we thought a pole should never be worked on except from approved climbers strapped firmly to the feet and legs. Actually, the writer probably would have better feet today if they had not been banged up from using these climbers on poles too small, crooked and knotty for their proper use. Now, we admire any man who repairs a line so that it will give good service. If he wants to use a ladder, that's his business and more power to him!

• • •

An operating company which was experiencing difficulty on a rural line because of interference from a power parallel gave as the reason for not clearing the trouble the fact that they did not have proper testing instruments for the location of this type of trouble. They had not reported their trouble to the offending power company. It is our opinion that this is a wrong attitude. Power companies intentionally do not cause trouble and we always have found them most cooperative in helping to make tests. Often they can suggest remedial action which can be taken to eliminate interference on nearby communication channels.

• • •

Referring to old text books on telephony published around the turn of the century, we note that it was common practice to place 25 or more stations on one rural line. The boast was made frequently in those days that a certain arrangement would give good service with this number of stations.

People just talk over the telephone more now than they did 46 years ago and, in general, in order to give good rural line service, not more than 10 stations should be connected on any one rural line. A smaller number, say eight or four stations, is better still.

• • •

Only during the past few years has drop wire been used to any great extent on rural line work. Now, not only is drop wire extended from the line to the house in most cases, but it also is used to run the first span when a branch circuit breaks off from a main open wire lead. This same arrangement is used often when an open wire circuit connects to a cable terminal. The use of drop wire in this manner not only makes a neater job, but also provides better clearances and a more trouble-free plant.

PLANT MAN'S QUIZ

Q. We have a line which is causing trouble due to defective double barrel splicing sleeves. These splices are high resistant and cause noise trouble. Is there a suggested remedy for this condition?

A. Attempts have been made by operating companies to grind through the outer covering of such sleeves and solder the bright surfaces of the sleeves and wire together. Also, repairs have been made by soldering jumpers around the defective splices. Both methods are expensive and are not recommended. The best plan is to replace the twisted sleeves by new ones of the compression type. If sufficient slack cannot be pulled for the sleeve replacement, a special repair sleeve of extra length can be obtained which eliminates the need of using a section of wire and two new sleeves to cut out defective splices.

• • •

Q. When a 20-ft. rural line pole rots or breaks at the ground line, is it the best plan to reset or stubb?

A. Ordinarily, these poles can be reset except at road crossings or other locations where the wire clearance cannot be reduced. In all locations of this nature the pole must be replaced or stubbed.

• • •

Q. How should high tensile strength wire be deadended for a long span rural line construction?

A. Strain insulators should be used for this purpose. When this wire is deadended on a crossarm, the strain insulator should be held in place by a clevis. The crossarm in this case should not be drilled for pins, which provides greater strength. The clevices are attached to the crossarms by a five-eighth inch bolt.

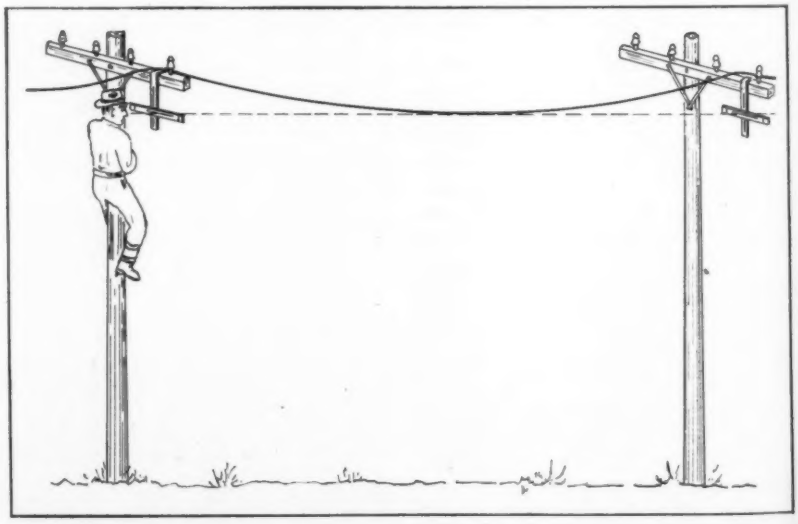
• • •

Q. We are attempting to connect some two-party selective magneto lines to our switchboard. One station is rung by the operator over each side of the line to ground. When one party rings the operator or rings off after completing a call, the other party answers. Can you explain the cause of this trouble and suggest a remedy?

A. To provide satisfactory service with this arrangement, the shunt springs of the hand generator should be arranged to open the bell circuit when the crank is turned as this removes the ground from this particular instrument. If this is not done, the output of the hand generator, going out over the metallic line to throw the drop in the central office, also will find a path through the two sets of bells to the two grounds which would cause the trouble you mention.

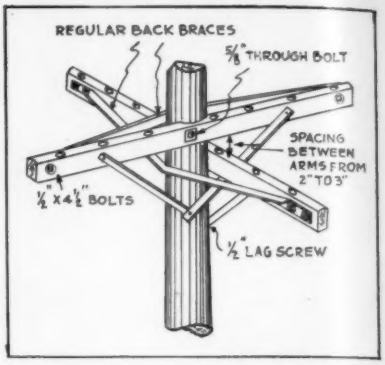
• • •

Q. What method should be used to sight sag when stringing line wire on crossarms on a rural line?



A. One method which proves satisfactory is indicated in the accompanying drawing.

Q. How should angle iron back braces be used on a buck-arm corner?



A. The accompanying sketch indicates one method of building this type corner.

• • •

Q. Is it possible to connect magneto telephones on a rural line so that any station can call the central office without disturbing other telephones on the line?

A. This service is provided by connecting a push button in each telephone so that one side of the hand generator output can be grounded. The ring-down drop on the switchboard then is connected from one side of the line to ground. Normally, the hand generator is connected to the line metallic and is used in this manner to call other stations on the same line. To call the operator, the special key is pressed as the generator is turned, which connects the ringing current from ground over one side of the line through the drop to ground. This will throw the drop but will not disturb the bells in the telephones, which are connected metallic.

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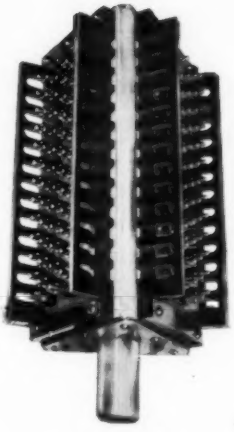

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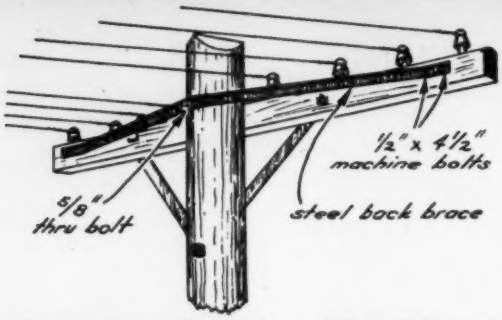
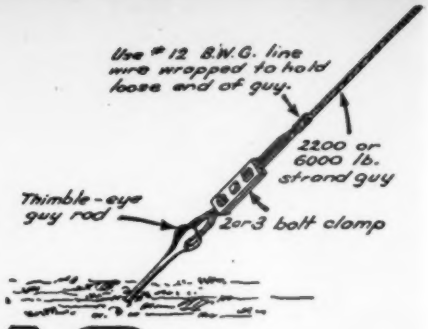
In design, workmanship or materials, you won't find a better telephone instrument. Thirty-nine years of telephone manufacturing experience are behind this modern Leich telephone.





GET IDEAS from this NEW BOOK

It's designed to help you get the best service from your
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well-known telephone authority, it shows you the methods
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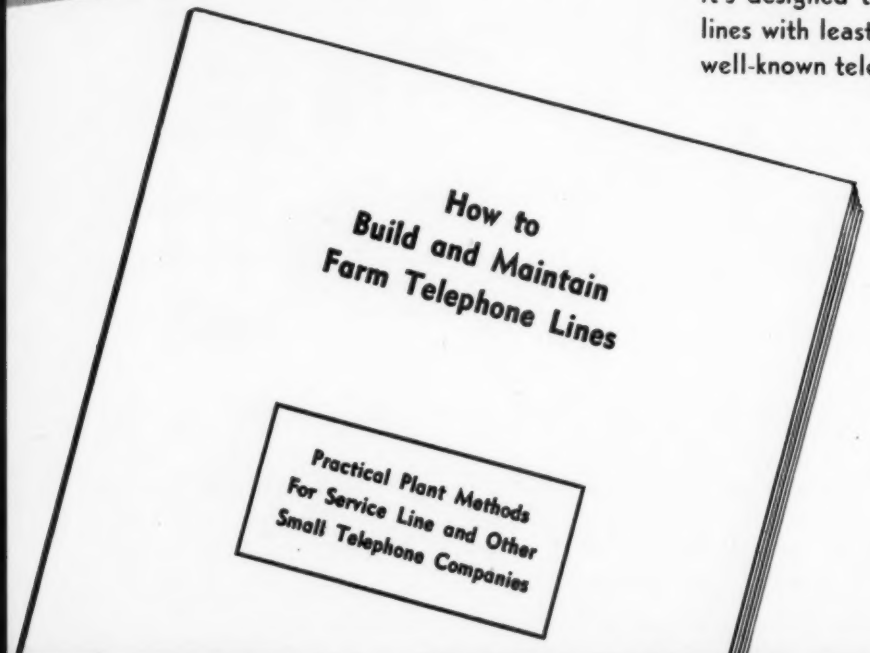

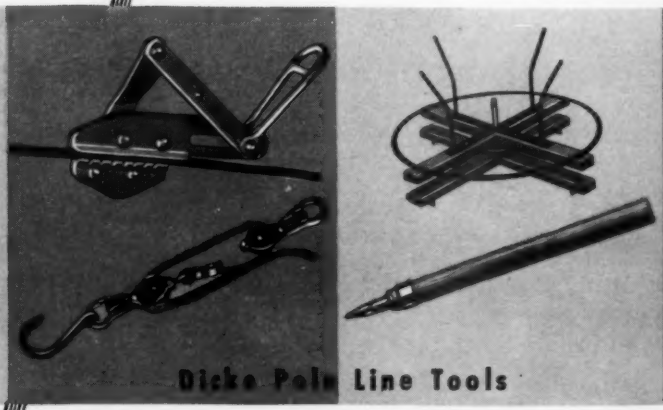

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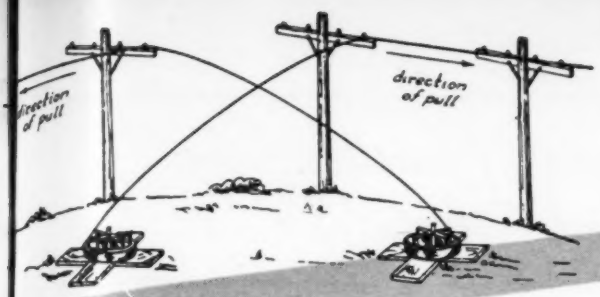
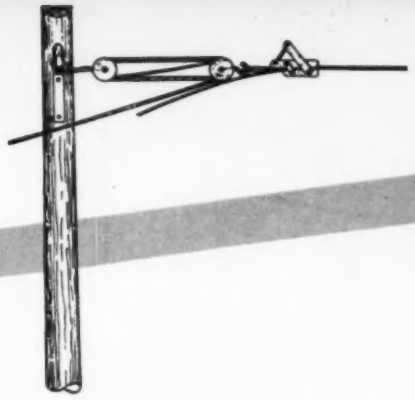
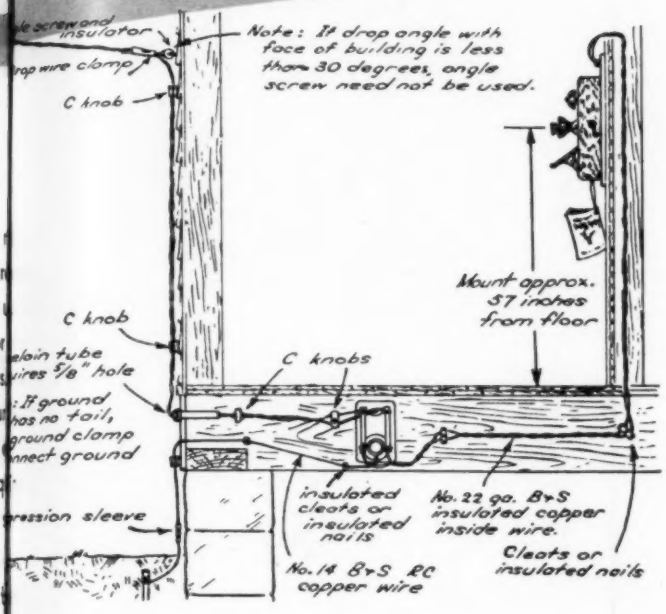
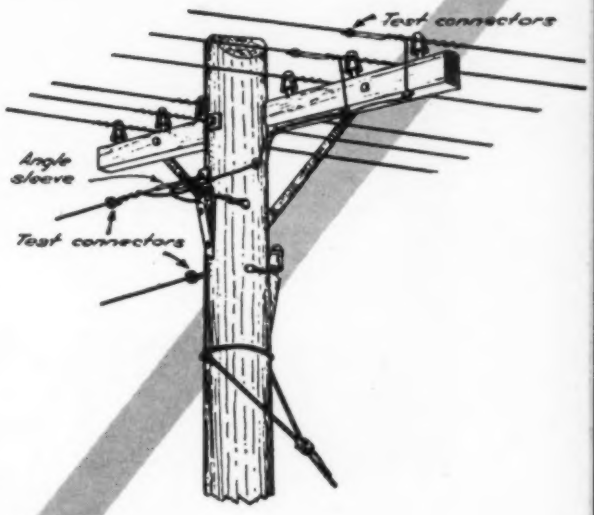





Note: If drop angle with face of building is less than 30 degrees, angle screw need not be used.
C knob
C knob
C knobs
Mount approx. 57 inches from floor
insulated cleats or insulated nails
No. 22 ga. B+S insulated copper inside wire.
No. 14 B+S EC copper wire
Cleats or insulated nails



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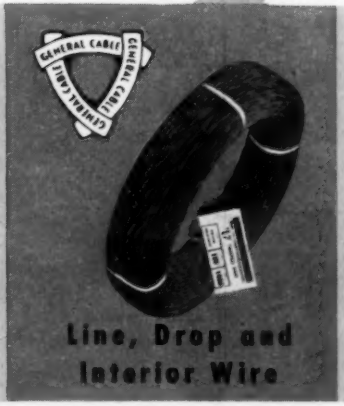
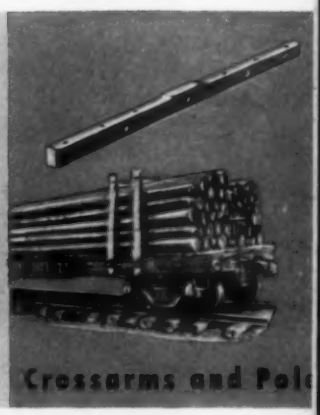


Line, Drop and Interior Wire

Estwing Tools



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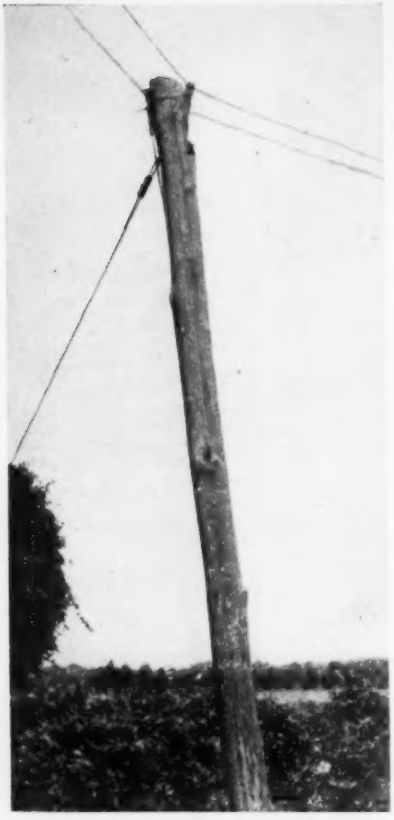
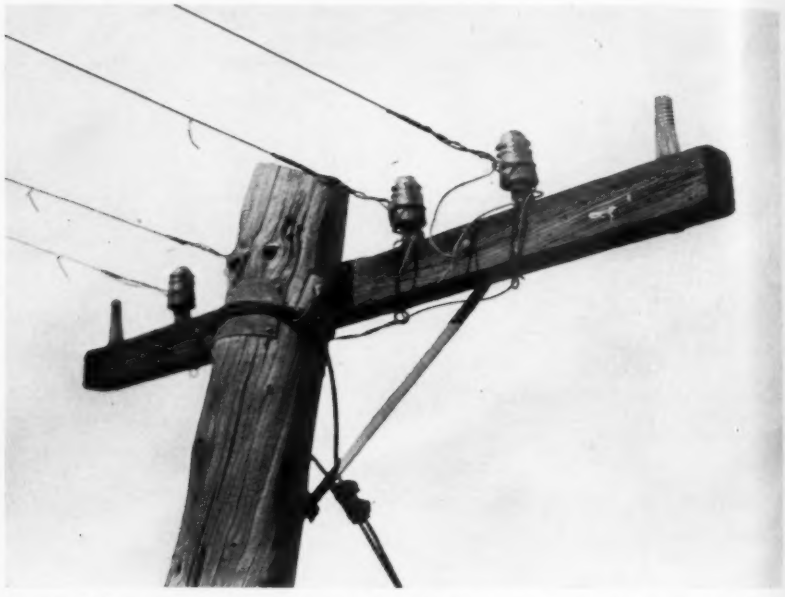
Rural Construction And Maintenance

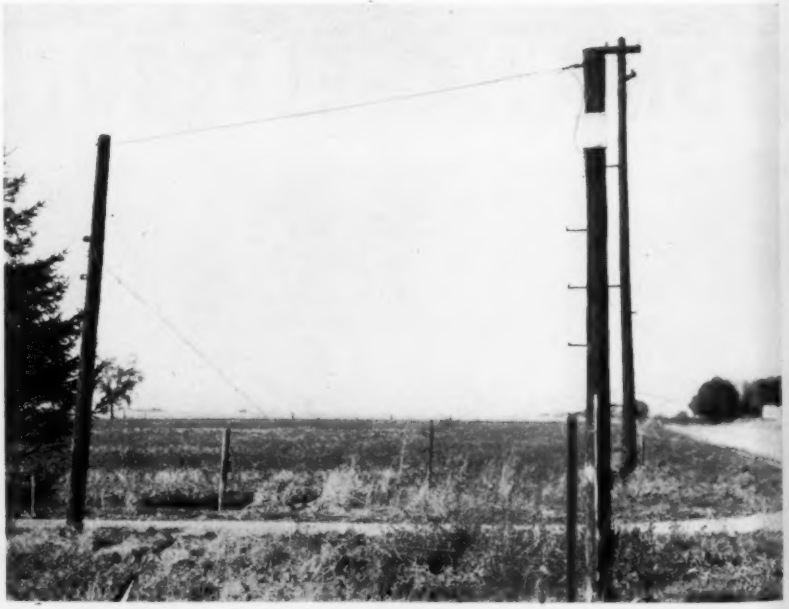


Well designed corner on a rural line. The pole is raked and well guyed. The vine, however, should be removed from the guy before it causes trouble.



Example of how jumper wires may become a source of trouble. Note that soldered connections are used instead of solderless connectors. Note also that one jumper has been cut and twisted together, without benefit of solder or tape. Corrosion and noise trouble surely will result.

Missing insulators and trees contacting the line contribute to poor telephone service. From the appearance of this wood bracket, the insulator has been missing for years. No doubt the wet weather service on this line is poor.

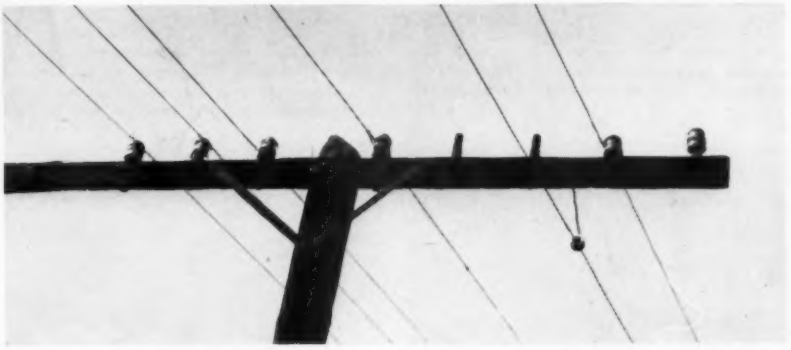


Modern rural line construction is well exemplified here. An open wire spur extends from an underground main cable. A short span of drop wire extends the line from the cable terminal to the deadend pole of the open wire. Strain insulators are used to deadend the open wire circuit. Adequate protection is provided.

A good example of fine rural line construction with one exception. The wood brackets are placed almost directly opposite each other, which reduces the clearance between the wires. If one bracket had been dropped so that its top were about even with the bottom of the other, better clearance would have been obtained.

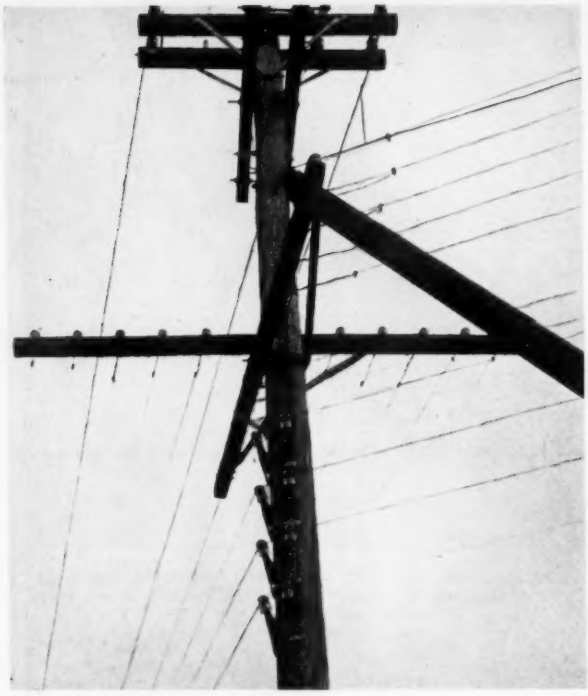
Good example of joint power and telephone construction. Aerial rural lines connect to aerial cable at this point.

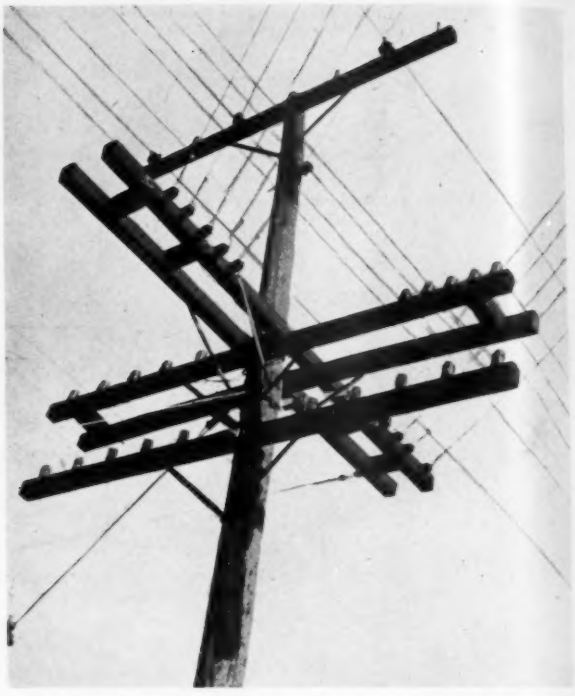
The butchering of trees, as shown in the foreground, never makes friends for any telephone company. When trees must be trimmed, the job should be performed carefully as the trees in the background.



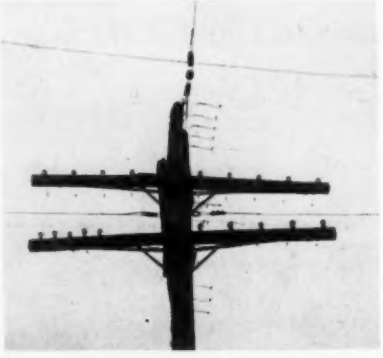
This novel method of providing a transposition, is not, in general, considered good. Either a double groove transposition glass or a drop bracket should be used. With this arrangement, hits in the transposition very likely are due to the wire swinging below the crossarm.

Although this is good construction, lack of planning is evident as this valuable evergreen tree soon will be into the wires. No doubt, obtaining permission to trim the tree will not be easy.

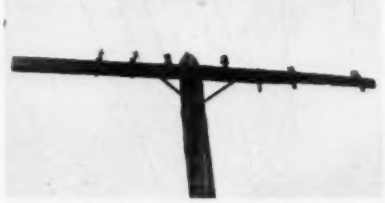




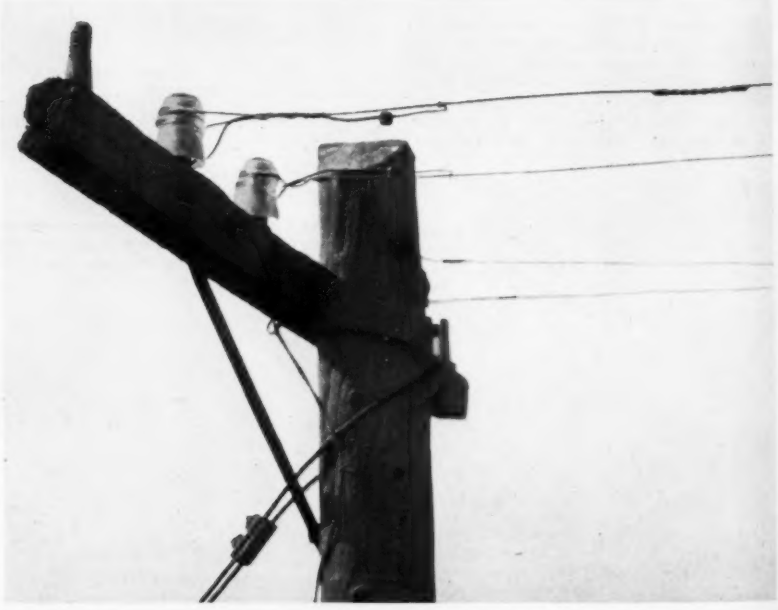
LEFT PHOTO: This was no doubt a good corner pole job before it was cluttered with wood brackets. It would have been better had a second crossarm been added instead of the brackets. Note, also, how this pole is cut up by numerous climbings by lineman's spurs. Pole steps would have been a vast improvement. **RIGHT PHOTO:** A good example of a deadend using strain insulators instead of pins in the crossarms. Note the use of a double crossarm which is provided with special bracing.



A good illustration of back braces used on a buck arm pole. Note, however, that the arms are twisted, due to the wires being deadended on the pins. This could have been prevented had the line wire been deadended on strain insulators attached to the center of the crossarms. Note that a good job has been made of using solderless connectors to attach jumpers to line wires.

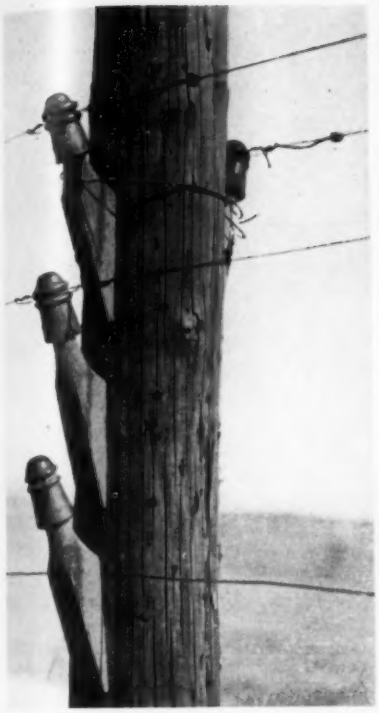


This crossarm is in deplorable condition and we shudder to think what may happen to the line if the wires load up with sleet this winter. All crossarms in this stage of depreciation should be replaced immediately.

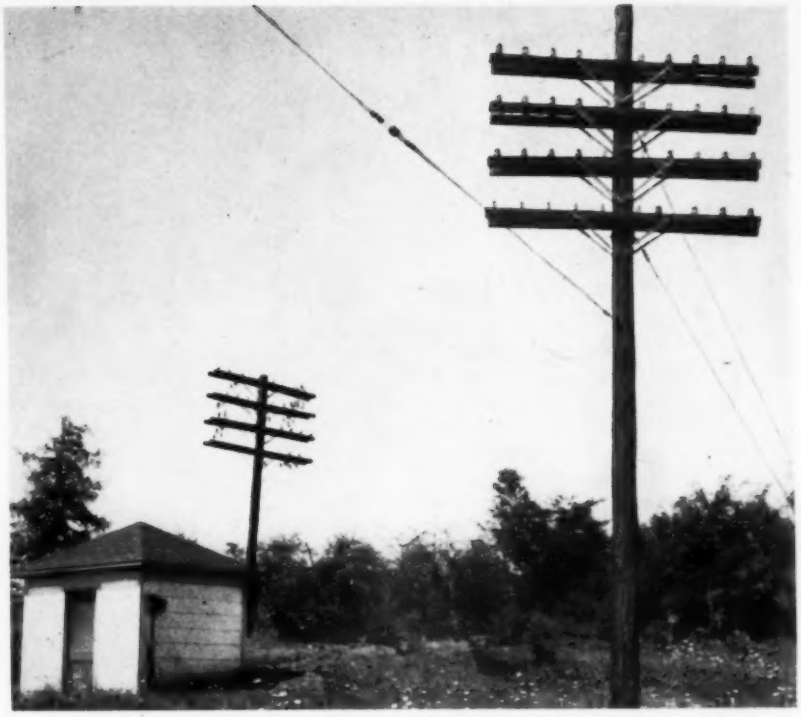


Twisted tube sleeve in this picture probably is causing noise and cut-out trouble. Test all such splices and, if there is any suspicion that they are defective, replace immediately.

CONSULT YOUR MANUFACTURERS ON NEW CONSTRUCTION AND MAINTENANCE EQUIPMENT

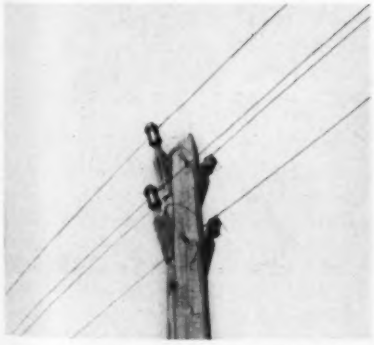


Shown here are numerous sources of potential trouble. One line wire is not tied to the insulator. Jumper wire is old and, although solderless connectors are used, connections with line wire are made carelessly.

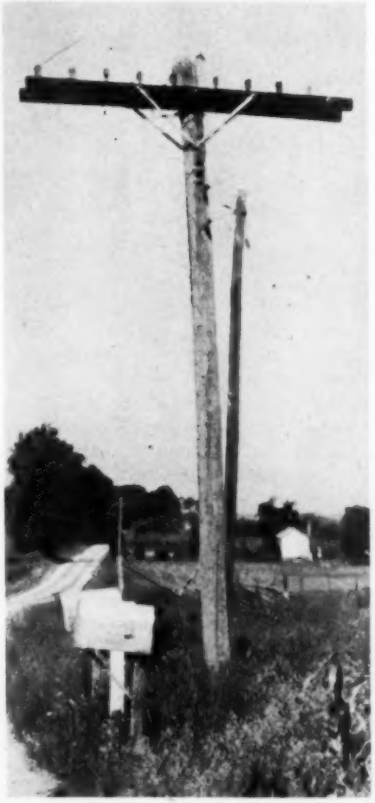


Excellent example of a two-pole corner on an open wire line.

This single crossarm used on a deadend is old and probably will cause trouble. Either a double arm or a single arm with a backbrace should be used on all deadend poles of this type.



A good example of open wire rural line construction. The brackets could have been separated more, but, even so, good clearance has been provided. The line wires are sagged properly and evenly.



Double crossarm used on a corner where extra strain is encountered. It always is best to provide an ample margin of safety on all lines.

This tree has been trimmed so low it practically is ruined. It may as well be removed entirely for its beauty is gone completely.

THE OPERATOR'S CORNER

BY
MAYME WORKMAN
TRAFFIC
EDITOR

MANY of the major problems in handling long distance calls today are due to "growing pains"—the volume of traffic having outgrown the switchboard facilities provided to handle it.

At the recent convention of the South Dakota Telephone Association, held in Sioux Falls, W. P. Parish, district traffic superintendent at Sioux Falls, gave an interesting talk on the subject, "Toll Operating," a subject in which we are all especially interested at the present time.

Mr. Parish outlined the method of procedure in handling long distance calls in tributary and toll center offices of various size and pointed out that, as an exchange grows larger, toll operating must of necessity become more complex and more specialized if the operating is to be efficient. The speaker posed this question—"What are the basic fundamentals in toll operating, no matter if it is performed in a small or large office?" Mr. Parish answered the query by stating:

"First, the character of the operating must be such as to be pleasing to the customer. Long distance calls are pleasing when they are handled in a straight-forward businesslike manner, with courtesy, speed and accuracy.

"Second, calls should be completed as far as possible on the first attempt, while the calling party is at the telephone. Before the war we were completing over 90 per cent of the long distance calls in this fashion with an average handling time of 1.4 minutes. Keeping the calling party on the line obviously saves circuit and operating time; enables the operator to get directions for subsequent attempts, if the called party is not reached; starts conversation quicker when the calling party recognizes the called party's voice. It enables the calling party to hear the operating work and gives him an idea of what has to be done to complete the call.

"The operator should take advantage of the presence of the calling party to personalize the service and explain delays. If there ever was a time when personalization of the service was important in the telephone business, it is now—when the patience of so many of the public has been worn thin and through lack of understanding cannot see why we cannot get their calls through as fast as during the previous years. The tone of our service, if good, will do more than anything else to secure a fair understanding and tolerance on the part of our customers. By tone of the services we mean to make the service sparkle instead of being a drab succession of fixed phrases and, for example, to avoid:

"(1) Unnecessary requests for repetition.
"(2) Ignoring or failing to acknowledge requests or details.
"(3) Failure to explain delays.
"(4) Hurried manner.
"(5) Off line and cord splitting.
"(6) Interrupting the customer.
"(7) Hesitating or lack of giving the customer confidence in our ability to handle his call.

"To explain to an operator what we mean by personalization, I have used the following definition of it, which I think is a good one: Personalization is not useless palaver—it is doing our work in such a way, that our mental attitude reflected by our voice, choice of words and manner of speaking will show our customers that we are pleased to serve them and that we are able to do so accurately and as quickly as possible under the circumstances. To do that requires patience, courtesy, imagination, straight-forward intelligent and efficient handling of calls, a well-trained voice and above all a willingness to serve.

"In toll operating, efficient use of the circuits is of the utmost importance, especially at this time. Attempts at efficiency, however, should not be made at the expense of accuracy and thoroughness. In this connection, if toll center operator can give reports direct to customers instead of requiring her to relay the information through the local operator, it will save much operating and circuit time both for the toll center and the tributary. The practice of requiring time and charges on all calls also requires a lot of operating time and should be avoided whenever possible.

"The time used on attempts should be as short as possible, consistent with being natural and competent and in a manner acceptable to the customer.

"Secrecy of the service is insisted upon. Operators are told about state and federal laws on this subject. To reveal anything heard during operating, or even the existence of a call, to anyone not authorized to receive the information may call for immediate separation from the payroll.

"Now, let us trace the main operations in handling a long distance call. We use the CLR or combined line and recording method, i.e. the operator who records the call also does the operating on it. The operator tries to complete the call on the first attempt, while the calling party is on the line. If not completed on the first attempt, she continues the attempts if it is apparent that the delay will only be a short time. If the delay is going to be longer she sends the ticket to the point-to-point (delayed call) position. Practices are set up for subsequent attempts depending upon the type of call and conditions of delay, to render as fast service as possible without annoyance to the calling or called parties. On point-to-point calls not completed on the first attempt, word is left and when the called party reports ready, the call is completed as fast as a new call would be. At the direction of the calling party, attempts are made throughout the day—or days. Orders for cancellation are accepted without question.

"As mentioned before, in recording the call the operator should try to avoid unnecessary questioning and repetition. She should advance the call as soon as the called place and number are secured, leaving the other details of the call to be secured as an overlap operation. The essential details for immediate operation are, called place, called number, or address name (on person-to-person calls, the called party) and the calling number.

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"In advancing the call, if it is to a direct circuit point, or one switch, she rings the point or the toll center. On multi-switch calls she determines from her bulletin or the route operator, the toll center of the called place, and proceeds. On overseas calls she passes the details of the call to the overseas operator at New York or San Francisco.

"Calls from tributary offices, we want to assure you, take their precedence of handling according to filing time along with calls originating at the toll center.

"Reports on the progress of the call are made to the calling party. During the congestion we are now having, the frequency of these reports has been modified somewhat in order to save operating and circuit time. At the completion of the call the operator stamps the ticket, clears the circuit and sends the ticket to the rate desk for rating and filing.

"If we are to have good toll operating we must have well-trained toll operators. This phase of our work has been given a lot of study. The training varies, of course, with the size of the office, but the fundamentals I am citing are the same no matter where a toll operator performs her work. Until recently when the increase of toll traffic forced us to use every available position for commercial traffic, we trained our operators right in the switchboard line up. We had certain jacks and interposition trunks in their normal position on the board for use in training. In this way an operator learned from the beginning to accommodate herself to the working condition in a comfortable way. Tickets are prepared in advance to illustrate the handling of various types of calls and situations.

"In a large toll center it takes four weeks to train an operator on outward operating and two weeks on inward operating. Now this training is, of course, only a start and it is the duty of the supervisors to carry on the subsequent more finished development of operators until they become experienced. In fact, the training is never finished because we are constantly trying to improve our methods and procedures.

"Another important factor in toll operating and in any work, in fact, and one I cannot pass by in this discussion, is the matter of employe relations. There never was a time when they were more important in our business. If our relations are good with our employes, if they get the right kind of sympathetic understanding and patient supervision, then the tone of the service is good. Employes should be treated as individuals because they have individual characteristics of temperament and ability; they should learn to work in a natural and comfortable way; they should know what is going on; you can't expect them to have an intelligent interest in the business unless they are informed about it; they should know the ideas of service and the company's unique responsibility toward the community in protecting its economic security and physical safety."

In his closing remarks Mr. Parish stated: "We are all in the same boat in this problem of giving toll service. We have had similar problems before and licked them and we can lick this one, too. It's a problem that challenges us to exercise all the ingenuity and resourcefulness we have, but I am sure we will not only solve this problem, but within a few years, we will have toll service that will make our present service seem very old fashioned.

Questions from Illinois Operators

(1) Are operators permitted to talk on calls for customers? A man came to our central office and said he was in a hurry to get his call through and the circuits were busy. He asked the operator to talk on the call for him.

(2) Is it necessary to say "I'm sorry" when giving a busy report on local?

(3) If the calling party's telephone does not answer when you are ready to pass a report on his long distance call, what entry should be made on the toll ticket?

(4) How long can you hold the calling party's line while you are trying to complete his long distance call?

(5) Should rural codes be posted at rural positions?

Answers to these traffic questions are presented on page 65.

Person-to-Person

A Gift for "My Operator"

OPERATORS, many times, are called upon to find telephone numbers for elderly folk who cannot read very well or perhaps have misplaced their glasses. The gratitude of one old lady toward the sympathetic unknown friend who she came to call "My operator," was told to the writer, who is sure this little tale will strike a sympathetic chord with all the nameless "angels in distress" who have found time, despite a busy board, to help a person in need.

An elderly woman, walking with a cane and leaning on the arm of another woman for support, timidly entered a telephone exchange building seeking, "My operator."

"I have a present for her," she confided to the telephone man who, noting her uncertainty, offered to guide her through the building. "It's a box of chocolates because she always looked up my number for me when I couldn't find my glasses." Those times, it appeared, were fairly frequent.

The telephone man took her to the operating room where she gazed in amazement at the many operators, busy at their switchboard positions.

"All those girls!" she exclaimed incredulously.

The chief operator explained that this was a dial office and any one of a large number of girls might answer when a customer dials "O" for operator. The cheerful helper was a composite of all the capable women who staffed the switchboard.

The old lady nodded in understanding and left the sweets for all the operators to munch.

GREATNESS

"TO beat up under loss, to fight the bitterness of defeat and the weakness of grief; to be a victor over anger; to smile when tears are close; to resist disease and evil men and base instincts; to hate hate and to love love; to go on when it would seem good to die; to seek ever the glory and the dream; to look up with unquenchable faith to something ever more about to be—these things any man can do, and so be great."—**Zane Grey.**

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The equipment and parts are unpackaged (although most cable is on reels), but will be packaged after sale, when necessary, for shipment. One complete telephone installation located at the Holston Ordinance Plant in Kingport, Tennessee, will be offered by bid sale. Bids received on this item after 10 a.m. December 20, will not be considered.

All sales are subject to the standard condition of sales of the War Assets Administration and will be for cash, check, cashier's check or money order, unless credit terms have been arranged.

This surplus property is announced concurrently at fixed prices (except the above-mentioned telephone installation) to all priority claimants and to commercial users. 15% of this material has been reserved to fill orders received from Federal Agencies. After Federal Agencies and certified Veterans' requirements have been filled, other orders received by December 21st, 1946, will be filled in the following sequence: R.F.C. for resale to small business, state and local governments and instrumentalities, certified non-profit organizations and commercial users.

Veterans of World War II should apply at their nearest WAA Certifying Office for certification; the case number and date shown on the certificate location of the Certifying Office must be stated in the Veteran's "offer-to-purchase."

Unlimited orders are accepted. The right is reserved to reject any or all orders on bids. All orders on bids should be sent to War Assets Administration, attention — Aircraft Disposal Division, 699 Ponce de Leon Avenue, N.E., Atlanta, Georgia, telephone Cypress 3611.

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Engineering Library

VIRGINIA INDEPENDENTS HOLD

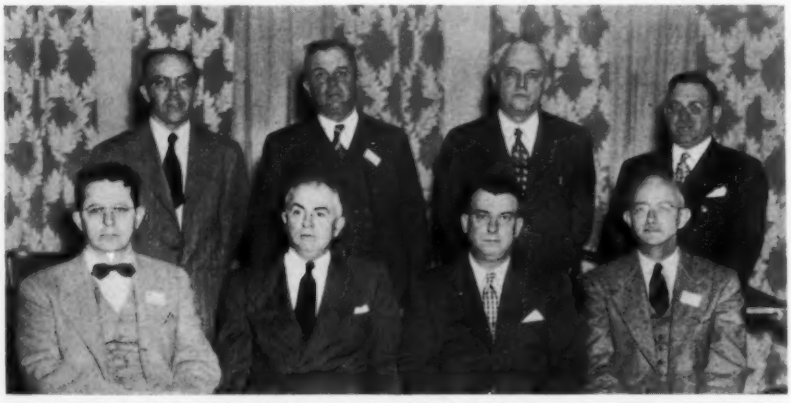
12th Annual Convention

By H. D. FARGO, JR.

Intertoll dialing, mobile radio-telephone service, carrier, public relations and rural service situation major subjects for discussion at meeting of Virginia Independent Telephone Association November 7 and 8 at Richmond.

THE scene shifted this year from Roanoke to Richmond for the 12th annual convention of the Virginia Independent Telephone Association. Although not quite so well attended as usual, the meeting, held November 7 and 8 at Hotel John Marshall, covered much interest subject material.

After a morning set aside for registration and meeting old friends, the convention was addressed by Clyde S. Bailey, executive vice president of the USITA, following a luncheon and message of welcome by Horace H. Edwards, mayor of Richmond.



Officers and directors of the Virginia Independent Telephone Association. Seated, left to right: STANLEY A. OWENS, Manassas; A. E. REYNOLDS, Bristol, vice president; LLOYD C. PULLEY, JR., Warsaw, president; and W. J. HOLLOWAY, Smithfield, secretary-treasurer. Standing, left to right: K. E. SCHULER, Farmville; E. B. FITZGERALD, Gretna; DR. G. B. COCKE, Manassas, and W. C. DARROW, Tarboro, N. C. Directors not present when photograph was taken are F. A. Gould, Harrisonburg; F. G. La Prade, Martinsville; W. A. Pankey, Bluefield, W. Va. and W. W. Gibbs, IV, Staunton.

Mr. Bailey summarized recent developments in the nation's capital having a bearing on the telephone business. He urged the full cooperation of the Virginia association in supporting: (1) Legislation to eliminate strikes in the utility fields, and (2) a move to effect an early termination of the excise taxes on telephone service, which have been in effect during the war. The speaker also drew attention to the need for all Independent telephone companies to be prepared to furnish radio-telephone service "when demanded in your area. If you are unprepared (or unwilling) to furnish such service, it surely will be provided by other interests and you will lose, possibly forever, this opportunity which has potential earnings of substantial size, depending upon your region," he said.

A Hospitality Hour under the supervision of Col. L. D. Densmore and A. C. Stratton, chairmen, W. M. Aiken, W. S. Argabright, F. W. Dickerson, W. W. Gibbs, III, A. W. Schell, F. G. Switzer and D. B. White, concluded the first day's program.

The second day of the convention opened with an address by J. M. Barstow, Bell Telephone Laboratories, New York City, on "Carrier Telephone Systems for Rural Service," illustrated with stereopticon slides. The M-1 carrier telephone system and its use in providing rural telephone service over power lines was explained in understandable terms. Mr. Barstow described the modifications which are required in power lines such as chokes and coupling devices. There also was a display of the various equipment required to provide this type of service.

"Mobile Radio-Telephone Service" was the subject chosen by John R. Moore, Washington, D. C., plant supervisor, The Chesapeake & Potomac Telephone Co. He described the numerous services which now may be offered by mobile radio-telephone equipment and these were classified as follows:

This group photographed at the Virginia meeting are, left to right, JACK HAVENS, Tarboro, N. C.; ELIZABETH DULL, Harrisonburg, assistant secretary-treasurer of the Virginia association, and ROBERT EDWARDS, Richmond.

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(1) Two-way, in which radio-telephone can call or be called by any telephone.

(2) Where mobile telephones can call or be called from one specific telephone.

(3) Signaling systems where vehicles may be reached by signal only, upon receipt of which the called party must go to the nearest telephone and call a designated number.

The address on "Intertoll Dialing," given by John Cevarich, general traffic engineer, The Chesapeake & Potomac Telephone Co. of Virginia, Richmond, proved to be of great interest to everyone. Emphasis was laid on how this type of service not only speeded up calls but also increased revenue. Charts were used to explain the extent to which inter-toll dialing is being used in Virginia at the present time and how it eventually will be extended to a nationwide network.

"Public Relations — Meeting Service Criticisms" was discussed ably by W. C. Darrow, commercial manager, Home Telephone & Telegraph Co. of Virginia. The service problem has been aggravated since the end of the war, not only by a jump of about 35 per cent to 40 per cent in toll business, but also by a turnover in operating forces that has reached 100 per cent in some instances. Added to this are the shortages of central office equipment, outside plant materials, and telephone instruments.

Mr. Darrow then threw the meeting open for a general conference under the following three heads: (1) What have we done and what can be done to improve the service in spite of shortages of material and experienced personnel? (2) What can now be done to extend service? (3) How may we obtain an understanding of our situation and a cooperative attitude on the part of those we serve? The open forum that followed proved very worthwhile. Mr. Darrow closed it with the statement, "Although we recognize fully that our service is below standard, we also know that the efforts now being put forth by the men and women of our companies are prodigious and effective, and deserving of the highest praise."

Group of southern Independents photographed prior to a session of the Virginia convention.

Attending the Virginia convention were RODNEY M. COGGIN, Warsaw (left), and W. C. DARROW, Tarboro, N. C.

"How the Telephone Industry is Solving the Rural Telephone Problem" was the subject of an informal talk by Rodney M. Coggin, president, Tidewater Telephone Co. He reviewed the policy of the national association on this important matter and explained how the Virginia Independent Telephone Association is cooperating in the over-all plan.

The new officers elected are: President, Lloyd C. Pulley, Jr., Warsaw; first vice president, A. E. Reynolds, Bristol; second vice president, Frank G. Switzer, Harrisonburg; secretary-treasurer, W. J. Holloway, Smithfield, and assistant secretary-treasurer, Elizabeth Dull, Harrisonburg.

The board of directors for the following year are as follows:

Mr. Pulley, Mr. Reynolds, Mr. Holloway, K. E. Schuler, Farmville; E. B. Fitzgerald, Gretna; Stanley A. Owens, Manassas; F. A. Gould, Harrisonburg; F. G. LaPrade, Martinsville; Dr. George B. Cocke, Manassas; W. C. Darrow, Tarboro, N. C.; W. A. Pankey, Bluefield, W. Va., and W. W. Gibbs IV, Staunton.

NFTW Plans New Drive For Wage Increases

Joseph A. Beirne, president of the National Federation of Telephone Workers, announced at the close of the federation's national convention November 16 at Denver, Colo., that the union would seek "substantial wage increases" on a national basis before next April 7, according to press releases.

"Failing to reach an agreement on terms of contract changes in advance of their expiration, our member unions will take strike votes among their membership, and if strike action is approved, a nationwide walkout will begin at 6 a.m., on April 7, 1947, or at some later time decided by the policy committee," Mr. Beirne said in a formal statement.

He said a seven-man committee with "authority to negotiate with representatives of the entire industry or with groups of employers" would carry out "nationally co-ordinated bargaining." The 50-man policy committee has power to reach any settlement.

"Items selected for national bargaining," Mr. Beirne said, "include union shop, check-off of dues, and basic wage increases, the amount of which will depend on the wage-price relationship existing next spring when our contracts expire."

In addition to its bargaining policy, the NFTW adopted a new constitution changing from the present federated structure to what a spokesman termed "a tightly knit national labor union" to be called the Communication Workers of America.

Union members will hold a referendum on adoption of the new constitution. This embodies clauses to include within the group's jurisdiction telegraph and radio workers, as well as telephone employes.

Alabama Association Elects Officers, Names Directors

R. S. Griffin, Dothan, Ala., was elected president of the Alabama Independent Telephone Association at the opening session of the association's annual meeting in Montgomery on November 18 along with these other officers:

M. M. Kennedy, Monroeville, first vice president; James N. Cox, Sr., Fayette, second vice president; J. E. Kirk, Scottsboro, third vice president, and Earl McDonald, Fayette, secretary-treasurer. The latter three were re-elected.

Named to the board of directors were Minor Corman, Atmore; R. C. Corr, Oneonta; J. N. Cox, Jr., Fayette; C. E. Kirk, Dothan; R. S. Griffin, Dothan; J. M. Miller, Jr., Fruitdale; Ward H. Snook, Foley; H. W. Vaughan, Fayette, and W. T. Weaver, Collinsville.

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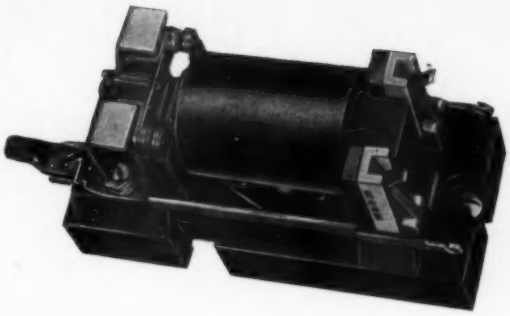

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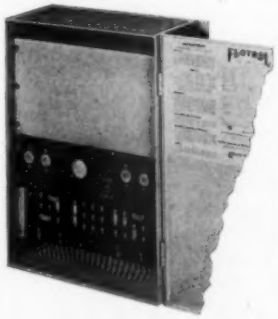

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By H. D. FARGO, JR.

North Carolina Independent Telephone Association holds 15th annual convention at Southern Pines, N. C. Considers service problems and adopts a positive approach to them.

A GOOD attendance marked the 15th anniversary of the North Carolina Independent Telephone Association's convention held November 11 and 12 at the Pine Needles Hotel, Southern Pines, N. C.—so good that two other hotels accommodated the overflow.

President Ralph Van Trine gave a complete report on the activities of the association in regard to state matters and also in cooperation with the United States Independent Telephone Association. He closed with the following statement: "Out of war and into peace came disillusionment, confusion and many problems not anticipated. Labor, materials and work equipment all are scarce, inadequate and inefficient. Unfilled orders, delayed toll calls and overloaded equipment bring to the personnel of our industry one of the most critical situations that we ever have been called upon to meet. That we will meet it successfully is not in doubt, but there are many gruelling months ahead with problems that will tax our strength and capabilities to the utmost. Telephone folks are stalwart and courageous and, with their sound judgment and cooperative spirit, order may emerge out of the present confusion sooner than many expect. Let us so work and pray."

The report of the secretary-treasurer, presented by Luke W. Hill, Tarboro, showed the association to be in a satisfactory position, both as regards membership and finances.

John R. Porter, past president, introduced the new president of USITA, R. A. Lumpkin who delivered an excellent address in which he summarized the difficulties of meeting the current demand for telephone service, which in the Bell System alone, is reflected in two million held orders.

"Whereas in a good prewar year the net new demand was in the order of one-half million, the new demand for main service is coming in at the unprecedented annual rate of 3½ million over and above those which can be cared for by 'disconnects'," said the speaker.

In regard to the rural telephone situation, Mr. Lumpkin pointed out that rather amazing progress has been made considering all factors: The ratio of farms with telephones to all farms increased from 25 per cent in 1940 to 32 per cent in 1945, but in 1946 even greater strides were taken. The Bell System increased farm telephones by 260,000 in the first nine months, more than twice the increase for all of 1945. Independent company figures show a gain of 100,000 for the year ended January 30, 1946.

Referring to the recent agricultural census, the speaker stated: "Minnesota, with 181,550 occupied farms, is recorded as having 103,176 with telephones while only 93,342 have electricity. In my home state of Illinois, over 62 per cent of the occupied farms have telephones — 124,039 farms with telephones as compared to 120,177 with electricity. Supported by federal funds, the REA has been responsible for the electrification of many of the farms in these two states. But so far as we are able to determine, it has not required a single cent from the government's bank account to provide rural telephone service in either of those states."

For the second consecutive year the convention was addressed by Dr. J. O. Perrine, assistant vice president, American Telephone & Telegraph Co. Those fortunate enough to have heard this able speaker know that he has the happy faculty of being able to discuss technical developments in readily understandable terms. He demonstrated with apparatus and in simple language how microwaves can be reflected and also sent on a beam. Also demonstrated was a small oscillator capable of sending out 10,000 million waves per second. (Original radio-telephone transmission went up to only 12,000 waves.) Thus there are now many times as many keys or "tones" upon which to send voice transmission. "So the electro-

Officers and directors of the North Carolina Independent Telephone Association. STANDING (left to right): J. H. SNIDER, Southern Pines, vice president; E. C. HEINS, JR., Sanford, vice president; R. M. TUCKER, High Point; E. O. FREEMAN, Aberdeen; L. D. DENSMORE, Charlottesville, Va.; J. E. BLADES, Elizabeth City; E. W. OLSCHNER, Tarboro, president; RALPH VAN TRINE, Durham; L. W. HILL, Tarboro, and FRED HILLS, Durham, secretary-treasurer. SEATED (left to right): R. S. DURANT, Marion; J. E. CLINE, Southern Pines; W. E. SPARGER, Mt. Airy, and W. C. HARRIS, JR., Lexington, vice president.

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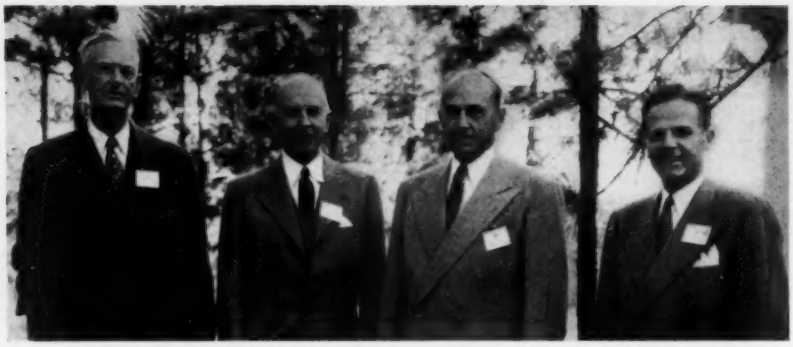
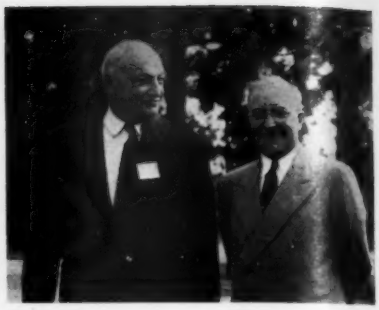


This foursome of the independent telephone executives who attended the North Carolina convention includes (left to right): JOHN R. PORTER, Tarboro; R. A. LUMPKIN, Mattoon, Ill., USITA president; RALPH VAN TRINE, Durham, and C. S. BAILEY, Washington, D. C., USITA executive vice president.



DR. J. O. PERRINE, New York City, assistant vice president, American Telephone & Telegraph Co. (left), and J. L. RICHEY, Bell Telephone Laboratories, who conducted demonstration at the North Carolina convention.

magnetic system has been given quite a licking," concluded Dr. Perrine, "and most long distance messages are transmitted over other than the original key." Several charts were used to show how the radio towers are placed at high points on the New York to Boston route.

The second day of the convention opened with an informal talk by L. D. Densmore, vice president, Virginia Telephone & Telegraph Co., Charlottesville. His topic was "Meeting Customer Requirements," and he suggested using the positive approach. Instead of telling an impatient public what can't be done and why, the speaker urged that operating companies give persons on the held order list some idea of when service can be furnished. "Play down the talk about difficulties; play up the angle of when we can serve. Tell the public specifically what the future holds, what plans are underway, such as rebuilding rural lines in 1947, converting to machine switching in 1948 and satisfying all unfilled orders."

The speaker declared that the No. 1 job is to provide present customers with adequate service. In many cases the installation of additional telephones to an already overburdened central office only would lead to an even more inferior service. Filling held orders should follow as speedily as possible. Mr. Densmore finished his earnest talk by urging frankness in explaining to subscribers why it costs more to furnish better service.

Others to address the convention were Arthur Cundy, secretary, Chamber of Commerce, Sanford, N. C., and Malcolm McDermott, Duke University Law School, Durham, N. C. The Tel-experts' Hour was conducted by R. E. Kepler, Durham, and an able staff consisting of R. S. Durant, engineer, Marion; Harry Dewey, plant, Elizabeth City; George Thompson, commercial, Southern Pines; J. K. Avent, traffic, Tarboro, and Fred Hills, accounting, Durham. This was in the nature of a combination conference with questions and answers.

Directors elected for the ensuing year are: J. E. Blades, Elizabeth City; John Cline, Southern Pines; Mr. Densmore; Mr. Durant; E. O. Freeman, Aberdeen; E. C. Heins, Jr., Sanford; E. W. Olschner, Tarboro; R. M. Tucker, High Point, and Mr. Van Trine, Durham.

The new officers are: President, Mr. Olschner; vice presidents, Mr. Heins, J. H. Snider, Southern Pines, and W. C. Harris, Lexington; secretary-treasurer, Mr. Hills.

Hear Acquisition of Washington Independent by Pacific T&T

Negotiations aimed at acquisition of the Moab-Newman Lake Telephone Co., Newman Lake, by the Pacific Telephone & Telegraph Co. were started November 15 in San Francisco, Attorney Paul Graves, counsel for the Washington Independent Telephone Association, announced.

While the Moab-Newman Lake line has only 34 subscribers and is willing to be absorbed by the larger company, certain telephone regulations bar the annexation. The hearing was expected to produce a plan for the consolidation.

V V

Telefonica Officials Quit In Row with Franco

The president of Telefonica Nacional and all directors representing private interests in Madrid, Spain, have resigned because of the government's ban on the stockholders' annual meeting called for December 7.

The action was the climax to intense activity in which the new government approved a reconversion plan that was publicly advertised and then apparently abandoned. Trading in stocks in defiance of a government order was laid to banks and brokers.

Telefonica is nominally a private concern in which the government has 80 per cent of the stock. Stock got into private hands through allowing citizens to purchase at par three government shares for every four owned. It is understood that Demetrio Carceller, former minister of commerce, informed Generalissimo Franco that Finance Minister Joaquin Benjumea Burin had allowed private buyers to get stock at 2,000 pesetas although it was quoted at about 6,000.

Resigning banker directors insisted that the government send inspectors to their banks to investigate whether they had traded illegally.

Observers see a battle between the greatest money interests here and the government's largest nationalized enterprise. It is regarded as big money's defiance of Generalissimo Franco.

Seek Hunter Who Shot AT&T Cables

Authorities are seeking a man who peppered four American Telephone & Telegraph Co. cables south of Springfield, Ill., with 30 rifle bullets, disrupting transmission service between Springfield and St. Louis and endangering cross-country communications to the west coast.

Police Officers Ronald Pope and John Naufel said a farmer reported seeing a man November 13 lying on the ground methodically firing at the cables. Company officials offered a $100 reward leading to his arrest and conviction.

Two of the damaged cables carry cross-country communications, including chain radio broadcasting, government service, news agency transmission and the Federal Bureau of Investigation national network. If one of the cables had been severed all such communications channeled throughout the west from Chicago would have been cut off, AT&T officials said.

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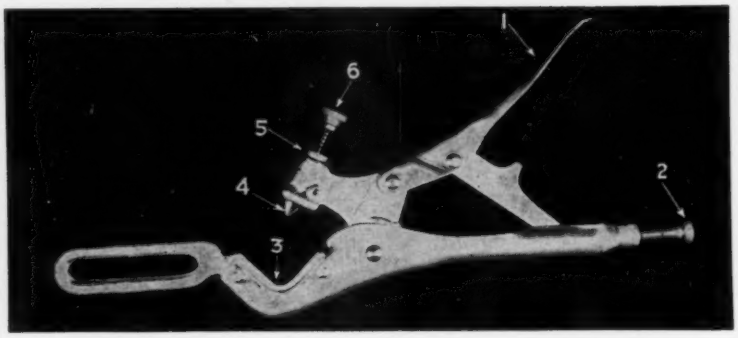

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Industry Considers Use Of U-2 Provisions

With the discontinuance of the federal government's Order U-2 on December 31 of this year (TELEPHONY, November 16, page 22), there is a growing concern within the telephone industry as to what policy should be followed by operating telephone companies in completing applications for telephone service where shortages of facilities exist.

Order U-2 which was promulgated by the communications branch of the utilities division of the old War Production Board and which was continued by the Civilian Production Administration (CPA) after the WPB was terminated, provides procedures for telephone companies to follow in determining which applications for service should be completed and for appeals to the CPA in behalf of applicants who claim that an exception to the order of precedence is warranted in their case because of undue hardship or essentiality.

With the shortage of equipment and manpower, the "held order" situation in the telephone industry will continue long after Order U-2 has been rescinded and leaders in the industry consider it necessary that some procedure in setting up an order of precedence should be established by the industry, itself, until it is possible to catch up with the unprecedented demand for telephone service.

There is a strong feeling in some quarters of the industry that the provisions of Order U-2 in regard to the order of precedence in handling applications for service should, subject to such exceptions that might be dictated by local exigencies, be continued by the industry until normal conditions return. It also is thought that it would be well for telephone companies to continue the use of U-2 forms and procedures in handling requests for preference or exceptions to the order of precedence, with appeals to be handled by committees composed of managerial or supervisory personnel of operating companies.

In view of the fact that in some states regulatory commissions may require the filing of the order of precedence and the procedure for appeals in companies' tariffs, it has been recommended that, where companies decide to continue the provisions of Order U-2, the matter be discussed with the commission as to their requirements. It is recognized that the filing of such procedures would give protection to telephone companies against charges of undue discrimination which might be made under state laws or regulations

because of the departure from the provisions of Order U-2 and the return to the old principle of "first come, first served."

It is felt that there is a definite advantage to both the telephone industry and the public in continuing the order of precedence provided for in Order U-2 as it can be defended as being reasonable and fair, since it was established and maintained jointly by the government and the telephone industry, and also that, by actual experience, those provisions have worked well both during and since the war. Whether or not telephone companies desire to continue the Order U-2 provisions it would be well for them to consult the state regulatory commissions and keep the commissions advised of their plans and experience in handling applications for service after the expected termination of Order U-2 on January 1, 1947.

Whatever policy is established in clearing waiting applications for telephone service, it is considered necessary that the public be informed of the policy. Employes of telephone companies also should have a thorough understanding of the procedure to be followed so that the held application job will be administered fairly and impartially as in the past.

V V

Executive Order Removes Wage and Salary Controls

President Truman on November 9 issued Executive Order 9801 which removed wage and salary controls adopted pursuant to the Stabilization Act of 1942. The order is as follows:

All controls heretofore in effect stabilizing wages and salaries pursuant to the provisions of the Stabilization Act of 1942, as amended, including any Executive Order or regulation issued thereunder, hereby are terminated; except that as to offenses committed, or rights or liabilities incurred, prior to the date hereof, the provisions to such Executive Orders and regulations shall be treated as still remaining in force for the purpose of sustaining any proper suit, action or prosecution with respect to any such right, liability or offense.

V V

Walkie-Talkies Control Transit Traffic

The Baltimore (Md.) Transit Co. put into effect November 14 a system of walkie-talkie radios, to be carried under the coats of its traffic inspectors, as an experiment in traffic control.

Company officials, describing the experiment as the first of its kind by a major city's transportation system, said that the new system will augment the fleet of two-way radio automobiles in use here for the last several weeks.

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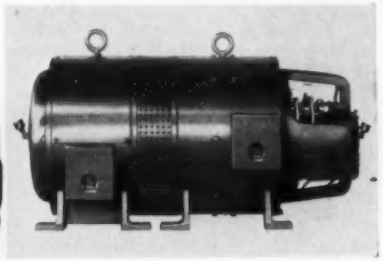

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E	"Our first control batteries lasted 14 years."	1928
F	"Good, if used as float charge."	1926
G	"Greatly prolongs life."	1928

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COURTS and COMMISSIONS

Arizona Service Hearing Continued to December 9

Hearing on an order directing the Mountain States Telephone & Telegraph Co. to show cause why it should not improve its service and facilities for customers in Arizona, was continued November 18 by the Arizona Corporation Commission until December 9. (TELEPHONY, November 2, page 34.)

The continuance was ordered following the presentation by the company of what commission members conceded to be a "very strong case" in its own behalf. However, the commission announced that it desired fully to digest all the evidence presented by the company before it arrived at a formal decision on the case.

William P. Mahoney, Jr., assistant to John L. Sullivan, attorney general, also requested the continuance in order that his office, too, might have an opportunity to study the testimony given by the company.

The company's response to the commission's citation and order was designed to offer proof that the Mountain States company had made every effort, in the face of wartime and postwar shortages of materials and equipment and of an unprecedented demand for telephone facilities throughout the state, to improve and expand its facilities and service. It further was intended to show that Arizona is obtaining its fair share of new telephone equipment — a question which was brought up by the commission in connection with the citation.

The response by Mr. Lawson was prefaced by a detailed review of the nationwide situation in regard to telephone service requirements and demands, and was concluded by an equally detailed analysis of the situation pertaining specifically to Arizona.

On September 1, 1945, it was pointed out, there were 31,302 telephones in service in Phoenix and there were on hand 5,599 "held applications," making a total demand for telephone service of 36,901 at that time.

During the period since then, to and including September, 1946, the number of orders for telephone stations or "gross new demand" was 18,691, or 50.7 per cent of the total demand at the beginning of the period.

In Arizona as of September 1, 1945, there were 77,460 telephones in service and 10,145 "held applications," making a total demand of 87,605. The gross new demand since then, to and including September, 1946, was 42,707 stations, or 48.7 per cent of the original total demand.

The net station gain in Arizona in 1940—the last prewar year—Mr. Smith pointed out, was 3,970 stations, whereas the gain for 1946 is expected to reach about 18,000 stations, representing an increase of 450 per cent over the 1940 station gain. The 1946 gain for Phoenix in 1946 is expected to reach 6,700 stations.

"The growth in out plant investment," the company's report to the commission said, "is similar to that in telephones in service, except that, because of necessary restrictions during the war, a considerable amount of construction had to be deferred, leaving us with the present necessity of investing large sums of additional capital to catch up with plant needs."

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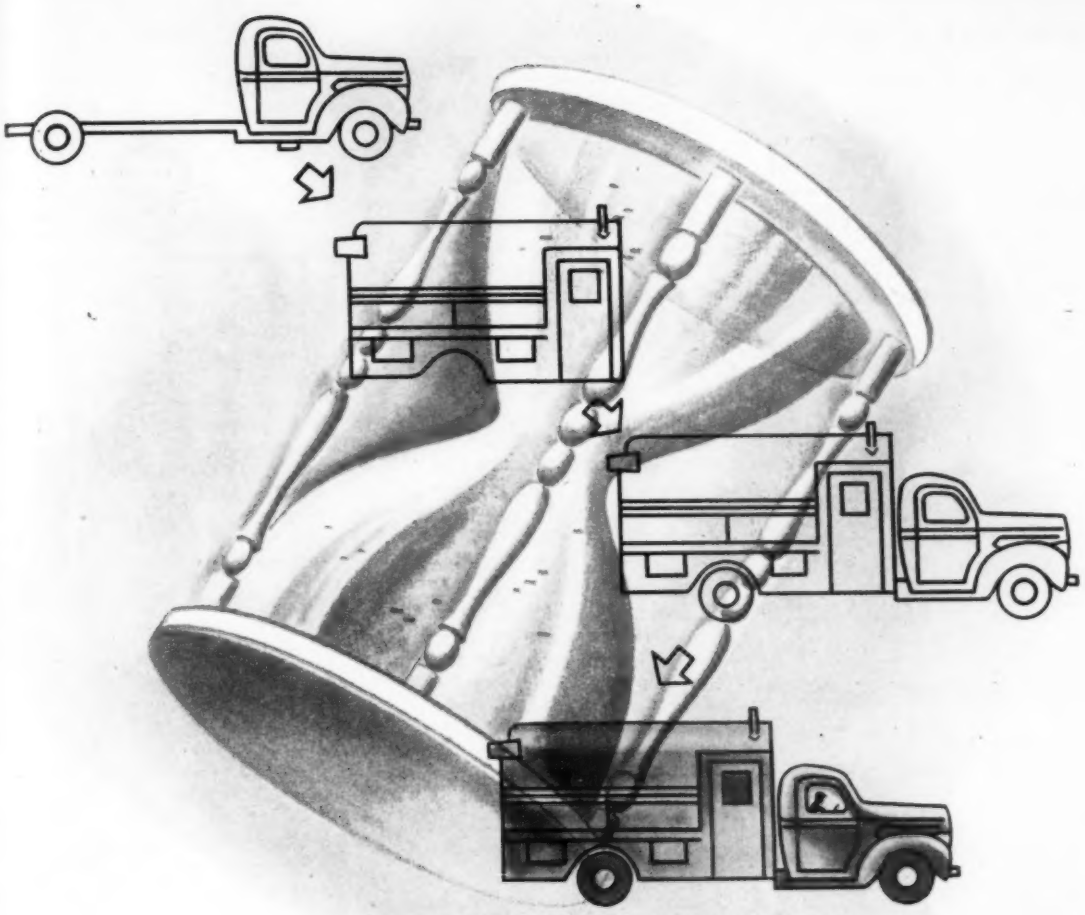

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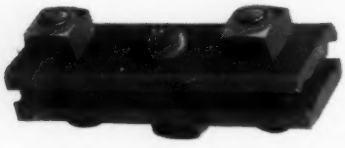

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on December 31, 1940, to 1,946 on August 1 of this year, also was mentioned.

Plans for 1947 call for the addition of 39 toll circuits in the state, as well as for new exchanges at Ashfork, Sulphur Springs Valley, Gila Bend and Payson.

A large addition to the Phoenix exchange, it was stated, now is in progress and, Mr. Smith's report added, "It is planned that this equipment will be in service by the last half of 1947. . . . The war and postwar periods have been most difficult, but in spite of obstacles we feel that a fine job has been done in providing the best telephone service practicable under existing conditions."

Mr. Smith reported that in the first nine months of 1946, the company has added 12,175 telephones in Arizona, one new exchange, 22 toll circuits, and has increased its plant investment in the amount of $1,545,000.

He said while it is recognized that schedules as planned cannot be met with any assurance due to the uncertainty of delivery of both raw materials and finished products, the company plans to add in Arizona, between October 1 of this year and December 31, 1947, 36,300 telephones and 45 new toll circuits and to increase its plant investment in the amount of $4,707,200.

"We feel," Mr. Smith told the commission, "that these accomplishments and proposals indicate our earnest desire and constant efforts to improve telephone service for customers in Arizona."

V V

Kentucky Towns Oppose Southern Bell's Rate Request

The Office of Price Administration's protest against proposed telephone rate increases in Kentucky probably will be continued despite plans to finish up OPA's work by December 12, George H. Goodman, OPA district director, said November 10. (TELEPHONY, October 12, page 30.)

OPA has joined the city of Louisville in formal protest before the Kentucky Public Service Commission against rate hikes sought by the Southern Bell Telephone & Telegraph Co. Fifteen other cities and two counties have entered informal protests with the commission, it was reported.

City Law Director Gilbert Burnett said the city will keep its protest before the commission "whether OPA stays in or not."

He added that at the hearings, which were to be resumed in Frankfort November 21, the city's attorneys will continue cross-examination of telephone company officials and introduce evidence on behalf of the city.

Among the objections to the proposed rate increases in Kentucky was a joint petition filed by the town of Lawrenceburg and Anderson County which asked rate reductions by the Southern Bell company and stated that the company should be required to improve service. The petition blasted "antiquated" equipment, which it called "unfit to render good service." It stated that the rates there were "exorbitant."

Charles A. Williams, Paducah, Ky., city manager, after hearing F. J. Turner, Atlanta, Ga., vice president and treasurer of the Southern Bell company in regard to his company's earnings, asserted: "It impresses me that there may be some justification for an increase in rates, but the increase asked is way out of line with what the testimony indicated before the hearing."

V V

Illinois Bell to Seek Rate Increases

Higher rates for telephone service will be sought by the Illinois Bell Telephone Co. before the end of the year, officials said November 18. The size of the increase was not disclosed, but it is expected to be between 15 and 20 per cent.

The company now is completing studies upon which its petition to the Illinois Commerce Commission will be based, company officials said.

This will be the first increase in service charges sought by the company for many years, when a rate increase was granted on its plea that higher

NO MORE UTILITY CASES FOR OPA

***Special to* TELEPHONY— Mobilization Director John R. Steelman has instructed Paul Porter, OPA administrator, to authorize or permit no further intervention by OPA in utility rate cases.**

OPA at the time was engaged in only one rate case of importance. That was the petition by Southern Bell Telephone & Telegraph Co. to increase intrastate rates in Kentucky. OPA Utilities Division Chief Lawrence Knappen had fixed appearance before the Kentucky Public Service Commission in opposition to the increase. It was understood that Mr. Knappen would remain in the case as a special consultant for the city of Louisville, but not as an OPA official.

rates were necessary because of increased costs. The grounds on which the present plea will be based are similar.

Preliminary studies indicate that company earnings next year will be the lowest in the 65 years the company has been operating, officials said. The rate of return on investment this year will amount to 2.95 per cent (exclusive of tax credits), as compared with 6.7 per cent in 1940, according to company figures.

The telephone company said the decision to ask higher rates was decided upon, only because steadily rising costs have reached a point where the financial soundness of the business is jeopardized.

Although gross revenues, the number of telephones in use, and service traffic have been increasing for several years, net income after all charges, has been declining, officials said. Net income after charges for 1946 is expected to be $6,990,000.

"This year's earnings," said the company, "will equal the low of the worst depression year. Earnings next year will be the lowest in our history. Compared with 1940, income is up 65 per cent, but expenses are up 80 per cent. The greatest expense has occurred in wages, where our total payroll cost is up 126 per cent over 1940."

V V

Withdraws Request For Rate Increases

The West Branch Bell Telephone Co. on November 12 received approval of the Pennsylvania Public Utility Commission of its request to withdraw a tariff schedule proposing a general increase in rates.

The tariff schedule, designated as Supplement No. 2 to Tariff Pa.PUC No. 18, was issued to become effective August 1, 1946, but was suspended until February 1, 1947.

The commission, prior to the telephone company's request for cancellation of the schedule, which closed the record, had planned an inquiry and investigation concerning the fairness, justness, reasonableness and lawfulness of such a tariff schedule.

V V

Asks Slash in Rates Of Douglas, Ga., Firm

Preparatory to a hearing before the Georgia Public Service Commission in Atlanta, the Coffee County Chamber of Commerce formally had petitioned for a 33 1/3 per cent reduction in rates of the Douglas (Ga.) Telephone Co.

The executive board feels that this rate cut will be commensurate with the

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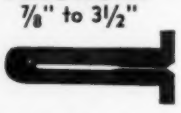

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services now being rendered by the company involved, members said.

J. L. Kirk, owner of the Douglas Telephone Co., asked that the executive board reconsider its action, giving the company another 60 days in which to improve its services.

This request was turned down when brought before the board at a called meeting.

Date of the hearing before the commission has not been set, awaiting study of the Douglas plant by a commission engineer.

V V

Lonsdale, Minn., Company Asks Higher Rates

The petition of the Lonsdale (Minn.) Telephone Co. for authority to change its schedule of monthly gross rates as follows will be heard December 16 before the Minnesota Railroad & Warehouse Commission:

Class of Service	*Present Gross Rates*	*Proposed Gross Rates*
Individual line business	$3.00 (a)	$3.75 (c)
Individual line residence	1.75 (a)	2.50 (c)
Four-party line residence	1.50 (a)	2.00 (c)
Rural multi-party metallic	2.00 (b)	2.00 (d)
Extension stations business	.75 Net	1.00 Net

(a) A discount of 25 cents per month on local gross rates if paid on or before the 20th of the month.

(b) A discount of 50 cents on gross rural rates if paid on or before the 20th of the month.

(c) Local rates to be billed monthly in advance with a discount of 25 cents per month if paid on or before the 25th day of the month in which service is rendered.

(d) Rural rates to be billed quarterly in advance with a discount of 75 cents if paid on or before the 25th day of the first month of the quarter, 50 cents if paid on or before the 25th day of the second month of the quarter, and 25 cents if paid on or before the 25th day of the third month of the quarter for which service is billed.

Temporary disconnections at one-half regular rate for any class of service.

V V

Approves Rate Increase For Catawba, N. C., Company

The North Carolina Utilities Commission on November 20 approved a rate increase for the Catawba (N. C.) Telephone Co., which was requested on the grounds that present rates were insufficient to meet rising operating costs and to permit the company to purchase additional equipment needed to handle new demands for service.

The commission allowed increases of 60 cents in the cost of private and

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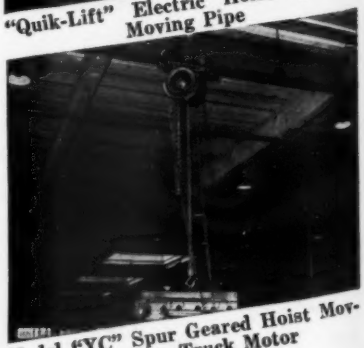

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residential telephone service; 25 cents in the rate for two-party, business lines; 10 cents in the rate for two-party, residential lines; $1.50 in the rate charged users of its three subscriber-owned lines, and a $2.50 increase in the installation charge, upping the charge to $4.50.

The company serves 76 residential and 22 business users.

V V

Radio-Telephone to Link New Mexico Ranch Area

Construction permits for two temporary provisional radio-telephone stations to serve an isolated ranch area in New Mexico were granted by the Federal Communications Commission November 7 to Winfield Morton.

The stations would link Santa Fe with Abiquiu, 50 miles distant and provide service to the latter town which, with 700 population, now is without telephone contact.

FM emission is to be used, with 250 watts power, on 39.54 megacycles. Authorization is to extend for a period of a year, subject to revocation and to applicant endeavoring to obtain public service.

V V

Summary of Commission Rulings and Hearings

Federal Communications Commission

November 4: Granted American Telephone & Telegraph Co. special permission for continuing authority to make changes in filing procedures where revisions are made in company's toll rate and route guides.

November 14: Granted New York Telephone Co. and New Jersey Bell Telephone Co. authority to supplement existing facilities between New York, N. Y., and Newark, N. J., by constructing and operating two-voice frequency cables. Estimated cost, $442,000.

Arizona Corporation Commission

January 16, 1947: Hearing concerning service improvements made by Navajo-Apache Telephone System, Inc., Holbrook, as directed by the commission.

Kansas Corporation Commission

December 2: Hearing on application of Farmers Mutual Telephone Co., Wakefield, for authority to make certain rate changes at Broughton and Oak Hill.

December 2: Hearing on application of Courtland (Kan.) Telephone Co. for authority to make certain rate changes.

December 2: Hearing on application of Belpre (Kan.) Telephone Co. for authority to make certain rate changes at Belpre and Trousdale.

December 2: Hearing on application of D. M. and Josephine M. Brasier, doing business as Americus (Kan.) Telephone Co., for authority to make certain changes in rates.

December 9: Hearing on application

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of Atchison County Mutual Telephone Co. for authority to make certain rate changes at Muscotah.

December 9: Hearing on application of Western Light & Telephone Co., Inc., for certificate of convenience and authority to transact business in Kansas within corporate limits of Waldo.

December 2: Hearing on application of Logan (Kan.) Telephone Co. for authority to make certain rate changes.

December 9: Hearing on application of Auburn-Vidette Telephone Co., Auburn, for permission to cease operating free service line between Auburn and Wakarusa.

December 9: Hearing on application of Home Telephone Co., Randolph, for authority to make certain rate changes.

Minnesota Railroad & Warehouse Commission

December 6: Hearing on application of Danube (Minn.) Telephone Co. for authority to increase rates.

December 9: Hearing on application of Vergas (Minn.) Telephone Co. for authority to increase rates and install dial service.

December 10: Hearing on request of Twin Valley-Ulen Telephone Co., Twin Valley, for authority to increase rates.

December 11: Hearing on application of Newfolden (Minn.) Central Telephone Co. for authority to increase rates.

December 11: Hearing on application of Warren (Minn.) Telephone Co. for authority to increase rates.

December 12: Hearing on application of Garden Valley Telephone Co., Erskine, for authority to increase rates at 18 exchanges in Minnesota.

Oklahoma Corporation Commission

January 29: Hearing on application of citizens of Stroud for order requiring Oklahoma Telephone Co. to render adequate service there. Continued from November 6.

January 29: Hearing on application of Ed Jackson et al for adequate service on rural line of Southwestern States Telephone Co. out of Purcell. Continued from November 6.

February 12: Hearing on application of Oklahoma Automatic Telephone Co. for more time to complete construction to restore telephone service out of Clarita. Continued from November 7.

Wisconsin Public Service Commission

November 26: Hearing on application of Rib Lake (Wis.) Telephone Co. for authority to increase rates.

V V

Apartment for Rent

Sheriff-elect Erwin F. Date, Mankato, Minn., said November 12 that since his election as Blue Earth County sheriff he has been kept busy answering telephone calls. And, he said, not all of the callers were congratulating him on his election; most of them wanted to rent his apartment when he moves into the sheriff's quarters in the county jail.

Rocky Mountain Association For Independents Planned

Plans for the organization of a Rocky Mountain Independent Telephone Association are being formulated by representatives of Independent telephone companies in the states of Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming.

Richmond R. Mann, owner of the Nunn (Colo.) Telephone Co., has taken the initial step in the organizational plans, and it is understood that he has sent letters to all Independent companies in the above mentioned states, explaining the need for an association through which the activities and interests of those companies can be coordinated, and asking that the companies inform him as to their interest in forming an association in the Rocky Mountain area.

It is felt that there is a growing need for such an organization through which Independent companies in that section can meet occasionally to discuss their problems, to exchange ideas, and to be in a position to take unified action in protecting and furthering the welfare of the industry in that area.

It is understood that a plan calling for a central organization to be known as the Rocky Mountain Independent

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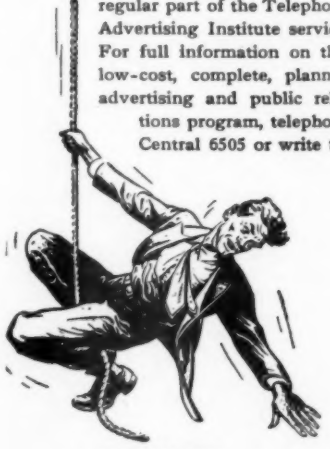

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Telephone Association, with subsidiary divisions or chapters in each state, is being discussed. The officers and board of directors of the central organization would be made up of representatives of the state units and the latter would have separate sets of officers and directors who could direct the affairs of the state groups and conduct annual and district meetings in their respective states.

In an interview with TELEPHONY, Mr. Mann expressed the hope that all Independents in the Rocky Mountain states will give him their opinion as to the need and possibility of organizing such an association.

V V

OBITUARIES

BRIG. GEN. JOHN B. FRANKS, chief quartermaster of the communications zone in the European Theater of Operations during the war, died November 14 at Walter Reed General Hospital, Washington. He was 56 years old.

Born in Leavenworth, Kan., General Franks entered the Army in 1917 as a private after being graduated from the University of Michigan. A year later he was commissioned a second lieutenant and after service in France was assigned to the Quartermaster Corps. From 1930 to 1934 he was deputy chief quartermaster at West Point. Later he held an advisory post on the joint Army-Navy Munitions Board in Washington. He received the Legion of Merit and Bronze Star medal for his services in France and Germany during the recent war.

He is survived by his widow and a stepson, Lieut. George E. Grimes.

• • •

WILLIAM L. WALKER, 80, pioneer Nebraska telephone man, died November 17 at his home in Lincoln. Mr. Walker started his career in the telephone industry in the '90s in Kearney, later was stationed at Omaha, and still later had been local manager at Seward and Harvard, Neb., and in Bonesteel, S. D. He retired in 1927.

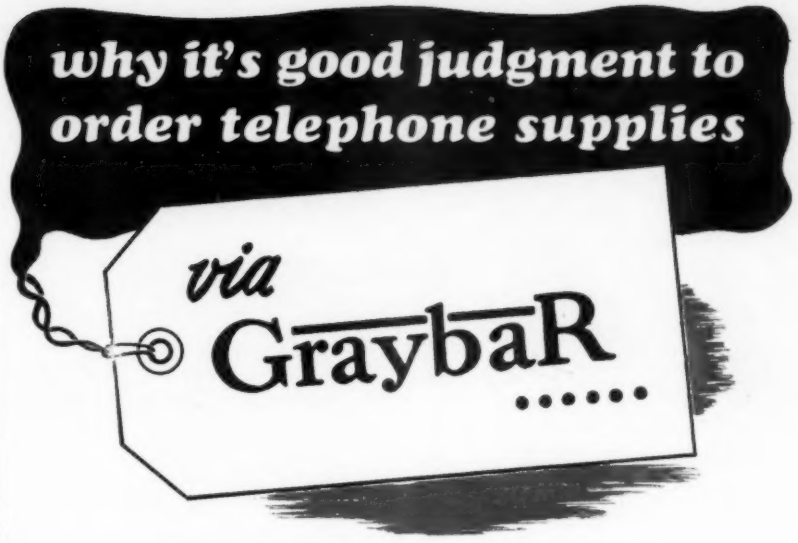
• • •

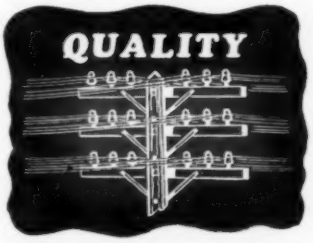
FLORENCE J. BULMAN, telephone operator and bookeeper for the Starbuck (Minn.) Telephone Co. for the past 35 years, died recently in the Minneapolis (Minn.) Hospital.

• • •

WAVERLY WOMACK, manager of the De Queen (Ark.) Telephone Co. at Lockesburg, Horatio, Dierks and De Queen, died in a Little Rock hospital November 15.

He is survived by his widow, his mother, two sisters, and a brother, Ernest of San Marcos, Tex.





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A booklet of 84 pages containing the first 21 installments of Frank E. Lee's popular article on "ABC of the Telephone," which have appeared in past issues of TELEPHONY, will be available to the telephone industry within a few days.

The first 21 installments covered the following subjects: Electrical circuits, transmitters, receivers, induction coils, generators, ringers, relays, line protection, dials, automatic switching, principles of protection, drop wire installation.

Mr. Lee resumed his articles in the November 16 issue of TELEPHONY, discussing installation of sub-station protectors. Future articles will cover: (1) Installation of instrument wire and station apparatus; (2) general circuit layout; (3) line maintenance; (4) fault locating (to include maintenance correction methods); (5) cross-talk elimination; (6) cable construction and transmission developments.

The first 21 installments and future articles are designed for the beginner and operating telephone companies will want to order the reprint of the early installments and subscribe to TELEPHONY so that their plant men will be able to maintain a complete file of Mr. Lee's series. All subscription orders may be back dated to Nov. 16 in order to include that issue and this number which includes Part XXIII of the series.

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E. R. Vaughan Made Union Telephone Company Official

Announcement of the recent appointment of E. R. Vaughan, formerly of South Haven, as vice president and assistant general manager of the Union Telephone Co. with headquarters at Owosso, Mich., was made November 1 by Ben C. Schweitzer, president and general manager of the company. Mr. Vaughan already has taken up his new duties.

Mr. Vaughan also is vice president of the Tri-County Telephone Co., South Haven, of which Mr. Schweitzer is president and general manager, and is president of the Michigan Independent Telephone Association, made up of 168 Independent companies organized for the betterment of telephony in the state.

After leaving the University of Michigan, where he studied engineering, 16 years ago, Mr. Vaughan became associated with the Michigan Bell Telephone Co. in the traffic department and spent 1½ years in the Grand Rapids district. Later he transferred to commercial sales, and was at Kalamazoo and Lansing. Still later he took a course in dial engineering in New York, and became associated with the Tri-County company as plant engineer with headquarters in South Haven.

Subsequently he became purchasing agent and was in charge of maintenance, building and transportation equipment for this company. In 1940 he was made general manager.

V V

Rebuild Telephone System

Rebuilding of the Wagoner, Okla., telephone system halted by the war will get under way immediately, according to R. E. Harris, Southwestern States Telephone Co. division manager.

Answers to Traffic Questions on Page 44

(1) Operators are not permitted to talk on calls for customers.

(2) In passing a busy report the operator should say "The line is busy" using a regretful tone of voice. If the operator knows that the calling party has made several attempts to reach the called number, saying "I'm sorry" would be in order.

(3) Enter "da (name of clg place) (time)."

(4) Ten minutes.

(5) Having this information posted is helpful, particularly in training operators. It should be posted.

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The plan of the Corporation is to charge a small annual retainer fee which will depend on the number of telephones your company operates. We will furnish weekly bulletins and copies of all declarations of surplus equipment and material.

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In a later issue we will outline the complete services offered by the Engineering Corporation.

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Boutin Elected President Of Missouri Association

The Missouri Telephone Association held its annual convention November 18 and 19 in the Hotel Governor, Jefferson City. This is the first year the convention has been held outside of Kansas City for many years and because of the central location of Jefferson City, there was an increased attendance at this year's meeting, with many more small companies represented.

Officers elected were: President, C. W. Boutin, Cape Girardeau; first vice president, Ray Kauffman, Lawson; second vice president, John C. Leader, Richmond Heights; third vice president, E. C. Ewer, Buffalo; fourth vice president, H. M. Harned, Hartville, and secretary-treasurer, R. W. Hedrick, Jefferson City.

The following were elected to the executive committee: J. R. Carter, Perry; George A. Herne, Warrensburg; Carl L. Spaid, Kansas City; M. J. Stooker, Kansas City; J. M. Roberts, Gallatin; F. M. Browne, Kansas City, Kan.; C. A. Vedder, St. Louis; F. M. McHenry, Jefferson City, and C. W. Gottry, Columbia.

The executive committee voted to hold the 1947 convention in Jefferson City during the third week in November.

A full report of the Missouri convention will be published next week.

Pacific T&T Names Powley Chairman, Sullivan President

Directors of the Pacific Telephone & Telegraph Co. have announced that President N. R. Powley has been elected chairman, effective January 1, 1947.

Mr. Powley will have served 12 years as president on January 1. Starting with the American Telephone & Telegraph Co. as an accounting clerk in Boston in 1908 at $50 per month, following his graduation from Amherst College, he has come up through the ranks—joining the Pacific company's organization in San Francisco in 1912—and at each successive step, he has held important positions such as rate engineer, commercial superintendent, general manager, vice president, first vice president and president.

Following World War I, Mr. Powley was in Los Angeles and played a leading part in the development and rehabilitation program of the Southern California Telephone Co., the principal subsidiary of the Pacific company. He

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went there as a division superintendent and rose to the position of vice president and general manager of the company. He returned to San Francisco as first vice president of the Pacific company and its subsidiaries in 1928, becoming president of the Pacific group in 1935.

Mark R. Sullivan, who will succeed Mr. Powley, is now president of the Chesapeake & Potomac group of Bell System companies with headquarters at Washington, D. C. Mr. Sullivan is well known throughout the Pacific Coast, most of his experience having been with the Pacific Telephone & Telegraph Co. Like other Bell System officials, he came up through the ranks. He entered the employ of the company as a traffic clerk in 1912, and like Mr. Powley, started at $50 per month. He advanced steadily over the years to the positions of general traffic manager for Northern California and Nevada in 1928, vice president and general manager for Northern California and Nevada in 1934, vice president with company-wide responsibility in 1938 and first vice president, which position he assumed in 1939.

In 1941, Mr. Sullivan became vice president in charge of the department of operation and engineering of the American Telephone & Telegraph Co., with headquarters at New York. This position he held throughout the war years and was responsible for the direction of many operating and engineering activities induced by the war. During this period he also served as a director on the board of the Bell Telephone Laboratories. In October, 1945, Mr. Sullivan became president of the Chesapeake & Potomac telephone companies.

V V

Sale of Michigan Independent Assures Continued Service

Sale of the Eastern Independent Telephone Co., Orleans, Mich., by Mr. and Mrs. Arthur H. Barden to Mr. and Mrs. Wesley Hackett of Northville, assuring continuation of service by a locally owned and operated concern, was announced November 15.

The Bardens, who had operated the company since 1923, had announced their intention to retire September 1. At the urgent request of patrons they agreed to remain until other arrangements for service could be made by a community group.

V V

"Date Due" Cards Adopted

The Saltillo (Miss.) Telephone Co. recently adopted the use of postal cards and a rubber stamp to notify

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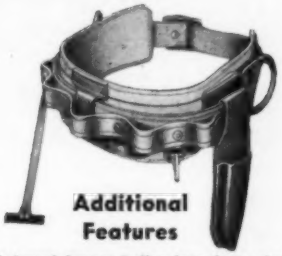

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subscribers of the due date of their bills for local service. These cards will not be used where toll charges are included in the bill, however, James Brady of that company stated.

V V

J. F. Carroll, Former Indiana Bell Head, Receives Award

James F. Carroll, who served as president of the Indiana Bell Telephone Co. during the war years, recently was presented a Certificate of Appreciation by Maj. Gen. Harry C. Ingles, Chief Signal Officer of the United States Army, in a ceremony at the Telephone Building at Indianapolis.

The certificate cited Mr. Carroll's work in anticipating the communications requirements of the Army and directing the expansion of telephone facilities. It mentioned specifically the provision for telephone switchboards and equipment at the Wabash River Ordnance Works in four days and for similar accomplishments at Camp Atterbury and Stout Field.

Georgia Town Gets First Telephone Service in its History

Telephones will be ringing at Sale City, Ga., for the first time in the history of that small town tucked away in a corner of Mitchell County. The Southern Bell Telephone & Telegraph Co. is extending a line from Pelham, Ga., to Sale City.

The movement came shortly after the town's only railroad, the Flint River & Northeastern, was abandoned. Junking of the line failed to bring any protest. It had not operated a train in so many years none but the old-timers of the former great cotton center could recall when the "Hi Henry," the name of the train, was the pride of the section.

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